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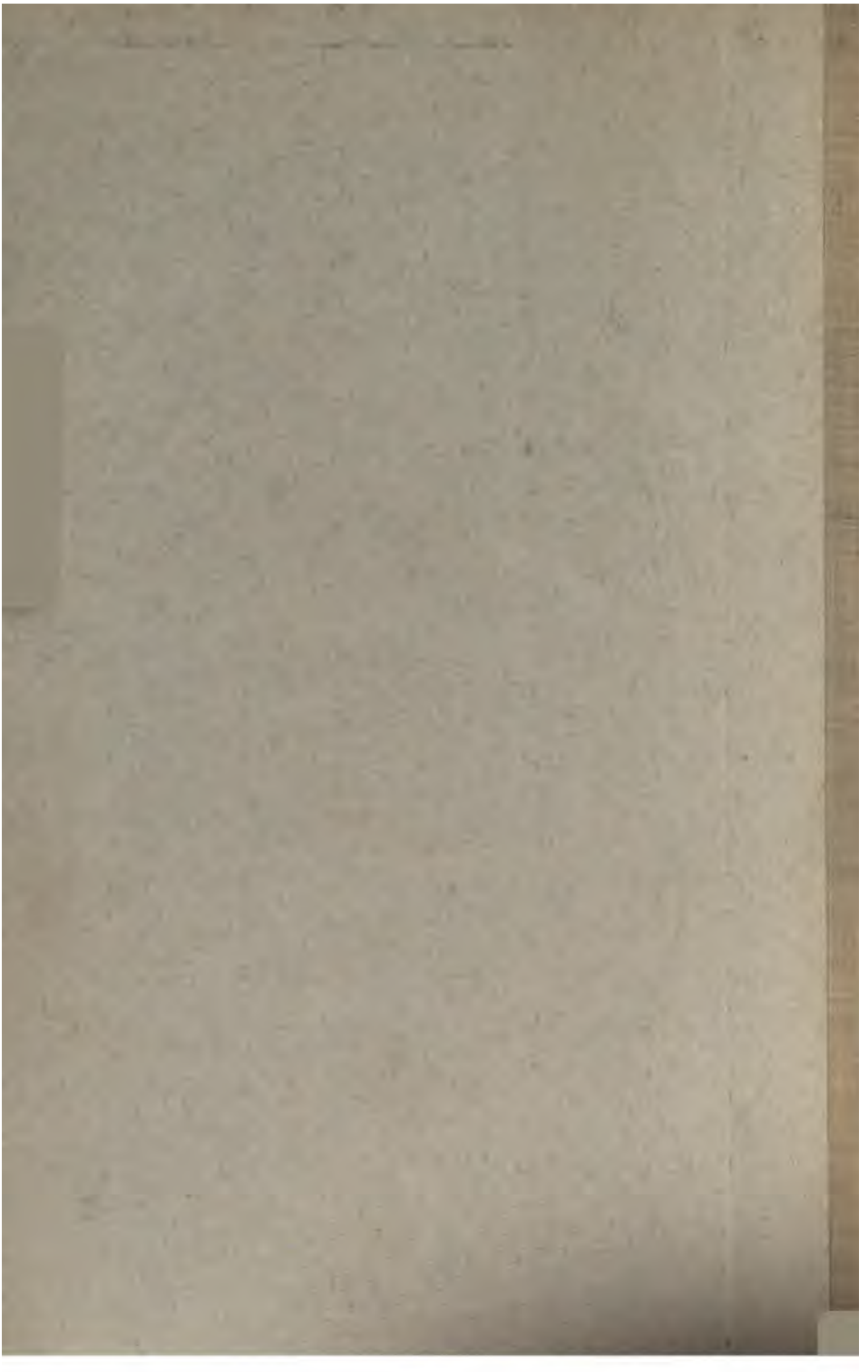
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ANNUAL REPORT

OF THE

WATER DEPARTMENT

OF THE

Board of Street and Water Commissioners

OF THE

CITY OF NEWARK, N. J.

FOR THE YEAR

1900

ANNUAL REPORT

OF THE

WATER DEPARTMENT

OF THE

Board of Street and Water Commissioners

OF THE

CITY OF NEWARK, NEW JERSEY.

FOR THE YEAR ENDED DECEMBER 31, 1900.

OFFICERS AND MEMBERS.

PRESIDENT,	GEORGE M BALLARD, 29 MILFORD AVENUE
COUNSEL,	E. LIVINGSTON PRICE, 800 BROAD STREET
CLERK OF THE BOARD,	WILLIAM E. GREATHEAD, 24 MILFORD AVENUE
ENGINEER & SUP'T. DEPT. WATER,	MORRIS R. SHERRERD, 938 BROAD STREET
CASHIER DEPT. WATER,	GEORGE M. VAN NAME, 177 ORCHARD STREET

COMMISSIONERS.	RESIDENCE.
GEORGE M. BALLARD,	No. 29 Milford Avenue.
C. V. BAUMANN,	" 385 S. Tenth Street.
WINTON C. GARRISON,	" 79 Washington Ave.
JOSEPH S. VINSON,	" 277 Walnut Street.
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To the Honorable the Mayor and Common Council of the City of Newark, N. J.

Pursuant to law, the Board of Street and Water Commissioners of the City of Newark, N. J., hereby presents the annual report of the Water Department for the fiscal year ended December 31st, 1900.

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REPORT OF

THE ENGINEER AND SUPERINTENDENT OF THE DEPARTMENT OF WATER.

To the Board of Street and Water Commissioners of the City of Newark, N. J.

GENTLEMEN:

I herewith submit the following report of the condition and operation of the works of the Department of Water for the year ended December 31, 1900.

THE PUMPING STATIONS.

Pumping from the wells at the Belleville pumping station to the City reservoirs was only resorted to on one day during the year 1900. The machinery at each station has received such attention as was necessary to keep it in serviceable condition. The pumps were turned over about once each month to prevent pitting of the wearing parts by rust. During the latter part of the year after the Pequannock plant was turned over to the City, the expense of maintaining the pumping stations was reduced by dismantling the pumps of small parts which could be attached on short notice, should occasion arise for their use.

CONSUMPTION.

The number of new taps made during the year was 859 (a decrease of 98 from last year); of this number 265 were on the Low Service, and 594 on the High Service. During the year there were seven 6-inch, six 4-inch, six 3-inch and twenty-two 2-inch connections made, giving a total of 41 large connections made, of which thirty-two were on the Low Service and nine on the High Service.

The number of taps to the 1st of January, 1901, was 34,353, of which 18,366 are on the Low Service and 15,987 are on the High Service.

The following table gives the delivery of water to the distributing reservoirs, average consumption, etc., for 1900:

CONSUMPTION STATEMENT FOR YEAR

ENDED DECEMBER 31, 1900.

MONTHS. 1900	Total Consumption per month in Million Gals.	Aver'ge Daily Consumption in Million Gals.	Number of Taps at Beginning of each month.	Aver'ge Daily Consumption per Tap in Gallons.	Mean Temperature.	Rainfall in Inches.	Amount Pumped per Month, Million Gals.
January.....	797.3	25.7	33498	769	30.3	4.23	
February	716.5	25.5	33525	760	29.4	5.85	3.4
March	756.4	24.4	33574	720	33.4	3.43	
April	683.8	22.7	33625	675	50.6	2.21	
May	706.6	22.8	33730	676	60.0	4.63	
June.....	712.3	23.7	33822	701	70.4	2.58	
July	749.5	24.1	33932	710	75.9	6.11	
August	756.3	24.4	33988	718	75.7	2.88	
September....	739.9	24.7	34059	747	68.9	3.30	
October.....	747.7	24.1	34147	706	59.0	4.50	
November ...	696.3	23.2	34225	678	46.1	4.68	
December	729.2	23.5	34286	685	32.8	1.75	
Total.....	8791.8					46.15	3.4

Average daily consumption.....	24,066,000 gallons
Average daily consumption per tap.....	701 "
Average daily consumption per capita, based on 260,000 population supplied.....	93 "
Approximate number of taps at end of year.....	34,353

The accompanying folder gives the consumption since 1892, when the gravity plant was introduced. Detailed information in regard to street mains, services, meters, &c., may be found in the appended tables.

The continued beneficial effect of the introduction of meters in reducing the waste is indicated by the following table which shows the monthly average consumption and the number of meters introduced during the years 1898, 1899 and 1900:

Month.	Number Meters Set.			Average Daily Consumption in Million Gallons.		
	1898	1899	1900	1898	1899	1900
January	21	40	524	28.2	29.9	25.7
February	17	18	338	28.0	32.7	25.5
March	30	47	294	25.1	27.7	24.4
April	20	117	351	25.3	26.2	22.7
May	133	714	496	25.4	27.1	22.8
June	62	627	176	27.5	27.1	23.7
July	54	259	82	28.4	26.3	24 1
August	49	263	86	29.4	25.5	24.4
September	34	341	77	28.5	25.3	24.7
October	80	439	97	27.6	25.8	24.1
November	124	545	135	27.1	24.8	23.2
December	58	673	56	28.0	24.2	23.5
Total	682	4083	2712	27.4	26.8	24.1

The decrease of 3.3 million gallons in the average daily consumption in three years, speaks for itself regarding the result of the extended introduction of meters. The normal increase in the average daily consumption had been about two million gallons previous to 1898.

REVENUE FROM WATER.

A comparison of the amounts received and due for water alone for the years 1899 and 1900, shows the following:

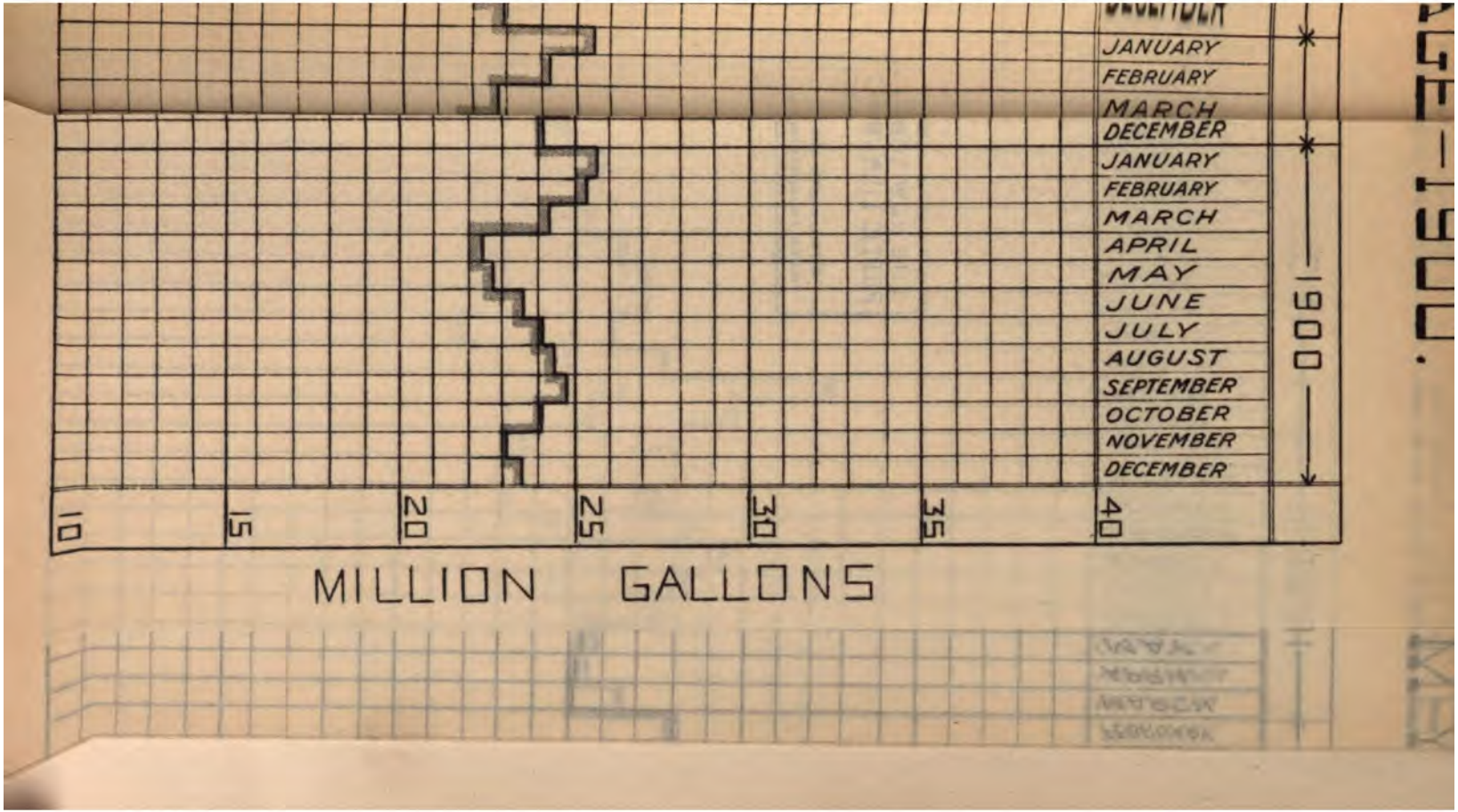
Received from metered water, 1900	$308,490.79	
Received from other water rents, 1900	340,012.95	
Total received from water rents, 1900		$648,503.74
Due from metered water, Dec. 31st, 1900		61,738.88
Due from other water rents, Dec. 31st, 1900		52,656.11
Revenue, 1900, actual and prospective		$762,898.73
Received from metered water, 1899	$210,278.68	
Received from other water rents, 1899	413,449.16	
Total received from water rent, 1899	$623,727.84	
Due from metered water, Dec. 31st, 1899	35,655.38	
Due from other water rents, Dec. 31st, 1899	57,975.16	
Revenue, 1899, actual and prospective		$717,358.38
Increased revenue, 1900		$45,540.35



was as fo

ring pipe was

hrants were set; of
127 hydrants; 51
added in service, making a to
2,144 of the year.


JANUARY
FEBRUARY
MARCH
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
1900
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35
40
MILLION GALLONS

The above showing indicates that the revenue which in 1899 had been $6,744.88 less than in 1898, due to the large number of changes from assessed to metered accounts, became normal again in 1900 and the increase of $45,540.35, should properly be credited to both 1899 and 1900, therefore, the reasonable annual increase may be considered as from $20,000.00 to $25,000.00.

DISTRIBUTION.

The extension to street mains in the city during the year 1900 were as follows:

15,400	lineal	feet	of	36-inch	pipe.
88	"	"	30	"	"
87	"	"	24	"	"
447	"	"	20	"	"
537	"	"	16	"	"
515	"	"	12	"	"
2,445	"	"	10	"	"
3,415	"	"	8	"	"
24,856	"	"	6	"	"
230	"	"	4	"	"

Total.....48,020 lineal feet or 9 $\frac{500}{5280}$ miles.

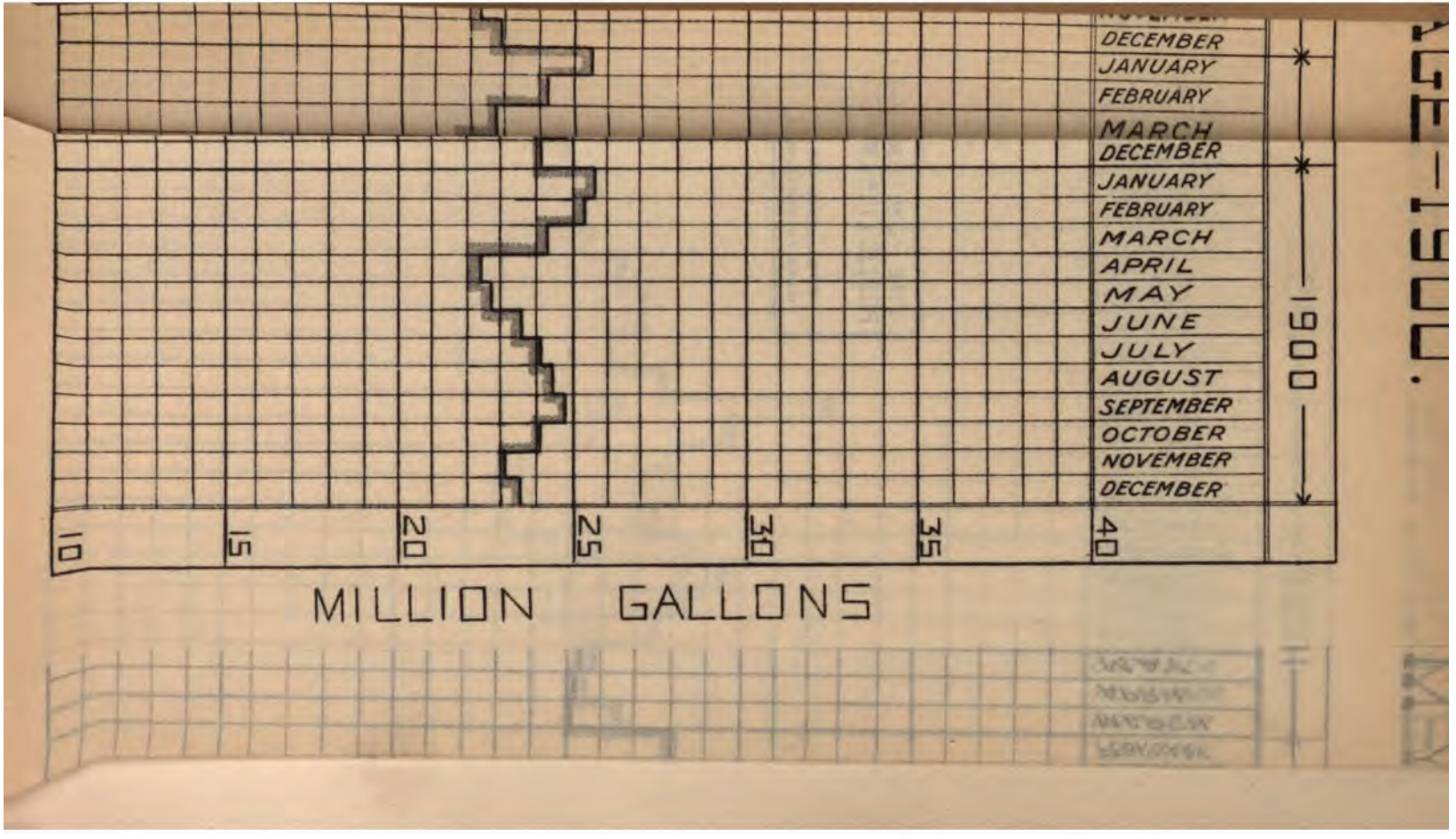
The total length of pipe connected with the works is as follows:

In the City.....	252 $\frac{4625}{5280}$ miles
Belleville Township	11 $\frac{172}{5280}$ "
Vailsburgh (Columbia Heights)	2 $\frac{1100}{5280}$ "
South Orange Ave. (Shooting Park)..	$\frac{1700}{5280}$ "
	266 $\frac{2407}{5280}$ miles

The amount of work done in relaying was as follows: 477 feet of 6-inch pipe.

The work done in the way of lowering pipe was as follows: 3,675 lineal feet of 6-inch pipe.

During the year 178 new hydrants were set; of these 127 were substituted in place of old hydrants; 51 were added to the total number in service, making a total of 2,144 set in the city at the end of the year.


DECEMBER
JANUARY
FEBRUARY
MARCH
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
1900
10
15
20
25
30
35
40
MILLION GALLONS

Giving as the total number of hydrants connected with the works:

In the City	2,144
At the Belleville Pump House and Reservoir	4
Township of Belleville	83
Township of South Orange	1
Columbia Heights	14
Total	2,246

The most important work in connection with the distribution system was the completion of the laying of the 36-inch cast iron high service supply main. This line now furnishes a duplicate supply from the Belleville reservoir to the South Orange avenue reservoir and the "special" high service district. It will also form a part of the distribution system from the new storage reservoir at Cedar Grove, and the cost of its completion has properly been included in that of the new storage reservoir.

NEW STORAGE RESERVOIR.

The plans and specifications for the reservoir at Cedar Grove were practically completed during the year 1900. Full details in regard to this work will be included in the report for 1901.

NEW WATER SUPPLY.

The entire Pequannock plant was turned over to the City September 24th, 1900, as provided in the contract between the City and the East Jersey Water Company. Legal proceedings had been instituted on the part of the City to force the Company to fulfill its contract in regard to several points in controversy. These were finally settled and a decree in Chancery mutually agreed upon, which practically gave the City all it had claimed. A full description of this plant and a reference to the study of yield of the water shed, etc., will be prepared for the report for 1901.

Respectfully submitted,

M. R. SHERRERD,

Engineer and Superintendent, Dept. of Water.

STATEMENT OF PIPE LAID IN 1900.

Month 1900	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER OF PIPE.										STOPS.	HYDRANTS
		36 in.	30 in.	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.		
Jan.	Highland ave., from Montclair ave., south									169		1	
"	4 in. blow off on 7th ave. Feeder, connecting 24 in. main with Branch Brook										205	1	
Feb.	Woodside ave., from dead end north of Elwood ave., north									50			
"	Elwood ave., from main in Washington ave., west									40		1	
"	Delavan ave., from main in Washington ave., west									40		1	
March	Verona ave., from main in Washington ave., west									41		1	
"	Fredonia ave., and Old Bloomfield road from Degraw ave., to N. 4th st.									1,012		2	2
"	Fairmount ave., from dead end north of Springfield ave. to Springfield ave.									160		1	
April.	Washington st., from Market to West Kinney st.								89	3,011		13	7
"	Astor st., from N. J. R. R. ave. (west side) to N. J. R. R. ave. (east side) and N. J. R. R. ave. from Astor to South st.								1,544	36		6	
	Waydell st., from dead end south of Ferry st., south									60			
"	Emmet st., from dead end east of Ave. D, east									88			
May.	South 12th st., from 14th to 15th aves.									568		1	1
"	South 11th st., from 15th ave. to dead end south of 15th ave.									245		2	
"	Hinsdale pl., from Washington to Chester aves.									1,056		1	2
"	River road, from dead end north of Grafton ave., north									402			1
"	Jacob st., from Springfield ave. to South 7th st.							219		31			
"	Leslie pl., from Bragaw to Shaw aves.									639			1
	Carried forward							219	1,633	7,648	205	31	14

STATEMENT OF PIPE LAID IN 1900.—CONTINUED.

Month 1900	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER OF PIPE.										STOPS.	HYDRANTS
		36 in.	30 in.	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.		
	Brought forward							219	1,633	7,648	205	31	14
May..	Bragaw ave., from Demorest st. to Clinton pl.									628		2	
"	Clay st., from Spring st. to Mt. Pleasant ave.									234		2	
"	Washington ave., east side from River road to Second river									6,455	25	21	3
"	North 5th st., from Chester ave., south									427		1	
"	Chester ave., from North 6th to North 5th sts.									264			1
"	Chestnut st., from Adams to Van Buren sts.									494		2	
"	Connection at So. Orange ave. Reservoir, between the 36 in. Steel Conduit and the new 36 in. Pipe					87						3	
"	Wallace st., from Wallace pl. to Bank st.									280		1	
"	North 12th st., from main in 7th ave., north									25		1	
"	Put in blow off on 20 in. main South 9th st. and Central av.									31		2	
"	Connection 24 in. main in 7th ave. to new 36 in. line in 7th ave.			87								1	
"	Malvern st., from Van Buren to Sandford sts.									460		1	1
June..	Connection South 9th st. and 12th ave.									13		1	
"	Connection South 9th st. and 11th ave.									28		1	
"	Seymour ave., from Hawthorne to Runyon aves.									511		1	1
"	Jelliff ave., from Avon ave., north									209		2	
"	Kossuth st., from Maine to Magazine sts.									331		3	
"	Fourth st., from Second ave., south									316		1	1
"	Third st., from dead end south of 2nd ave., south									24			
July..	Crittenden st., from Rowland st., west									192			1
	Carried forward			87		87		219	1,633	18,570	230	77	22

STATEMENT OF PIPE LAID IN 1900.—CONTINUED.

Month 1900	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER OF PIPE.										STOPS.	HYDRANTS
		36 in.	30 in.	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.		
	Brought forward			87		87		219	1,633	18,570	230	77	22
July.	New York ave., from Lang st, west									123		1	
Aug.	Brinsmaid pl., from Hawkins to Brill sts.									367		1	1
"	Ridge st., from dead end south of Bloomfield ave., south									216			
"	Cortland, from dead end south of Ferry st. to Horatio st.,									619		1	
	Highland ave., from dead end north of Grafton ave., to dead end south of Montclair ave.									351			
Oct.	Passaic st., from 4th ave., north to Erie R. R.								434			1	1
"	George st., from Magazine st., east									52		1	
"	Bremen st., from Magazine st. to dead end west of Magazine st.									148		1	
"	South 14th st., from Central ave., north									364		1	1
"	Berlin st., from main in Magazine st., east									50		1	
"	Hedden st., from dead end south of Clinton ave. south									351			1
"	North 11th st., from 4th ave. to Newbold st.									572		2	1
Nov.	Sherman ave., from Bigelow to Branford sts.									488		2	2
"	Bigelow st., across Milford ave.									85		1	
"	South 14th st., from Clinton ave., north									460		1	1
"	South 12th st., from Springfield to 18th aves.									392			
"	Frelinghuysen ave., from Runyon st., south									75			1
Dec.	Pacific st., from South st., south.									89		2	
"	Hobson st., from dead end south of Bragaw ave. to Shaw ave.									231			1
	Carried forward			87		87		219	2,067	23,603	230	93	32

STATEMENT OF PIPE LAID IN 1900.—CONTINUED.

Month 1900	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER OF PIPE. 36 in	30 in.	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.	STOPS.	HYDRANTS
	Brought forward			87		87		219	2,067	23,603	230	93	32
Dec...	Van Buren st., from East Kinney st., north									55		1	...
"	Sandford st., from main in South st., north									31		1	...
"	South st., from Sandford st to Bay ave.		...		...		515					1	1
"	Bay av., from South st. to Lehigh Valley R. R.								1,348			2	...
"	Seymour ave., from dead end south of Clinton ave., south		...							603		...	1
"	Chapel st., from Albert to Lister ave.							1,935		67		7	1
"	Lister ave., from Albert ave., to Joseph st.											...	...
"	Poplar st., from Lister ave. to Dock st.									281		2	...
"	North 6th st., from 75 ft. north of 4th ave. to Old Bloomfield road												
"	Fredonia ave., from North 6th to 4th st. (not including crossing under Morris Canal)												
"	4th st., from Old Bloomfield road to Verona ave.												
"	Verona ave., from 4th to 3rd sts.	15,400										3	...
"	Third st., from Verona ave. across the Greenwood Lake R. R. and Second river to Mill st. (Belleville)												
"	Mill st., east to right of way of 36 in. steel conduit												
"	Right of way of 36 in. steel conduit north to Belleville Reservoir												
"	Verona ave., from 3rd st. to 2nd st., connecting 36 in. steel conduit to 36 in. line in 3rd st.				290					28		2	...
	Carried forward	15,400		87	290	87	515	2,154	3,415	24,668	230	112	35

STATEMENT OF PIPE LAID IN 1900.—CONTINUED.

Month 1900	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER OF PIPE. 36 in.	30 in.	24 in.	20 in.	16 in.	12 in	10 in	8 in.	6 in.	4 in.	STOPS.	HYDRANTS.
	Brought forward	15,400	...	87	290	87	515	2,154	3,415	24,668	230	112	35
Dec...	Blow off on 36 in. line in North 6th st. at 3rd ave.							17				1	...
"	Connection of 36 in. line with future proposed line from Cedar Grove Reservoir; also connection of 10 in. blow off with sewer, and connection of 6 in. blow off with 6 in. pipe in Bloomfield ave			...	45			35		41		11	1
"	Connection 6 in. blow off with 6 in. main on North 6th st., (west side) between Chester and Berkeley aves.									46		2	1
"	Connection of 2-10 in. blow offs (one each side of 36 in. Gate) on 36 in. line with brook at North 6th st., south side Fredonia ave.							33				3	...
"	6 in. blow off at N. W. corner 4th st. and Grafton ave.			...						25		1	1
"	6 in. blow off at S. E. corner Verona ave. and 4th st.	...								15		1	1
"	Connection of 10 in. blow off with 36 in. line at 36 in. line at 3rd st. and Sylvan ave. with 2nd river, and of 6 in. blow off at 3rd st. and Sylvan ave. north of 36 in. gate.		...					127		12	...	2	...
"	10 in. blow off at north side Second river on 36 in. line.		...					51				1	...
"	10 in. connection for future distribution with 36 in. line, also 6 in. blow off opposite right of way at north side Mill st. (Belleville)		...		..			28				1	...
"	6 in. connection for future distribution, John st. (Belleville)									16		1	...
	Carried forward	15,400		87	335	87	515	2,445	3,415	24,823	230	136	39

STATEMENT OF PIPE LAID IN 1900.—CONTINUED.

Month 1900	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER OF PIPE. 36 in.	30 in.	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.	STOPS.	HYDRANTS
	Brought forward	15,400		87	335	87	515	2,445	3,415	24,823	230	136	39
Dec..	5-16 in. connections betweeen 48 in. steel conduit and new 36 in. line, and 5-16 connections between 42 in. steel conduit and new 36 in. line; also 6 in. blow off at Belleville Reservoir					450				33		11	1
"	Connection of new 36 in. line with 30 in. discharge pipe from gate house opposite South 8th st. at South Orange ave. Reservoir		88	...	112							3	...
	Total	15,400	88	87	447	537	515	2,445	3,415	24,856	230	150	40

During the past year 48,020 lineal feet of pipe have been laid in the city, of which

15,400 lineal feet of 36 inch diameter
88 " " 30 " "
87 " " 24 " "
447 " " 20 " "
537 " " 16 " "
515 " " 12 " "
2,445 " " 10 " "
3,415 " " 8 " "
24,856 " " 6 " "
230 " " 4 " "

} $9\frac{500}{5280}$ miles.

STATEMENT OF PIPE RELAID IN 1900.

Month. 1900.	LOCATION OF PIPE.	LENGTH IN LINEAL FT. Diameter of Pipe. 6 in.	Stops.	Hydrants.
April	Bergen st., across Springfield ave.	71	2	
July	Myrtle ave., from Warren st. north	43	1	
November	Newbold st., from North 11th st. 237 feet west	237	1	
December	Bloomfield ave., across North 6th street	126		
		477	4	

During the year 477 feet of 6 inch pipe have been relaid in the city.

STATEMENT OF PIPE LOWERED IN 1900.

Month. 1900.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. Diameter of Pipe. 6 inch.
February	Nichols st., from Pacific st. to east line house No. 29	410
June.....	Kossuth st., from Maine to St. Charles sts	420
"	South 12th st., from Gould to 9th aves	750
July	Livingston st., from 18th to Waverly aves	655
"	Morton st., from middle of block, between High and West sts., to West st....	345
August	Second street, between Orange st. and Sussex ave	275
September...	Miller st., from Sherman ave. to Brunswick st	210
October.....	Magazine st., from Dresden to Kossuth sts	610
		3,675

During the past year 3,675 feet of 6 inch pipe have been lowered in the city.

PIPES LAID, RELAID AND LOWERED. YEAR ENDED DECEMBER 31, 1900.

PIPES.	LENGTH IN LINEAL FEET.										Total.	Valves.	Hydrants.
	36 in.	30 in.	24 in.	20 in.	16 in.	12 in.	10 in.	8 in.	6 in.	4 in.			
Pipe Laid. (Extensions)	15,400	88	87	447	537	515	2445	3415	24,856	230	48,020	150	40
Pipe Relaid. Substitution of large for small pipe, and replacing old horizontal cast pipe									477			4	
Pipe Lowered, account of freezing									3,675				
Miscellaneous. Valves on hydrants, substitution for old broken valves and replaced hydrants												54	139
Total	15,400	88	87	447	537	515	2445	3415	29,008	230	48,020	208	179

Total Pipe Laid, Relaid and Lowered during the year.....52,172 ft.=$9\frac{4444}{5280}$ miles.

Total Mileage of Pipe connected with the works at the year ended, 1900...$266\frac{2447}{5280}$ miles.

SERVICES FROM JANUARY 1, 1900, TO JANUARY 1, 1901.

⅝-INCH SERVICES. MONTHS.	No. of New Services.	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
January	60	59	4		64	1,997	$1,414.82
February	44	6		1	45	1,211	676.00
March	43	10			43	1,273	814.00
April	102	7	2		104	2,125	1,503.00
May	83	22			83	1,951	1,388.58
June	97	11		3	100	2,047	1,636.00
July	59	5			59	1,170	866.00
August	73	11			73	1,635	1,132.00
September	89	10		11	100	1,917	1,413.00
October	75	6		3	78	1,798	1,124.00
November	56	4		1	57	1,396½	851.00
December	64	6		2	66	1,754	1,081.00
Totals	845	157	6	21	872	20,274½	$13,899.40

SERVICES FROM JANUARY 1, 1900, TO JANUARY 1, 1901.

1-INCH SERVICES. MONTHS.	No. of New Services.	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
January	8	1			8	129	$163.50
February	0						
March	7				7	163	140.00
April	5				5	58	100.00
May	9				9	204	180.00
June	7				7	116	140.00
July	2	1			2	122	76.00
August	9				9	214	180.00
September	2	2			2	47	40.00
October	4				4	93	80.00
November	1				1	13½	20.00
December	5				5	119	100.00
Totals	59	4			59	1,277½	$1,219.50

RECAPITULATION, 1900.

SIZE.	No. of New Services.	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
⅝-Inch	845	157	6	21	872	20,274⅛	$13,899.40
1 "	59	4			59	1,277⅛	1,219.50
Totals	904	161	6	21	931	21,552	$15,118.90

SERVICES FROM JANUARY 1, 1900, TO JANUARY 1, 1901.

1-INCH SERVICES. MONTHS.	No. of New Services.	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
January	8	1			8	129	$163.50
February	0						
March	7				7	163	140.00
April	5				5	58	100.00
May	9				9	204	180.00
June	7				7	116	140.00
July	2	1			2	122	76.00
August	9				9	214	180.00
September	2	2			2	47	40.00
October	4				4	93	80.00
November	1				1	13½	20.00
December	5				5	119	100.00
Totals	59	4			59	1,277½	$1,219.50

RECAPITULATION, 1900.

SIZE.	No. of New Services.	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
⅝-Inch	845	157	6	21	872	20,274⅓	$13,899.40
1 "	59	4			59	1,277⅓	1,219.50
Totals	904	161	6	21	931	21,552	$15,118.90

SPECIAL SERVICE CONNECTIONS FROM JANUARY 1, 1900, TO JANUARY 1, 1901.

MONTH.	2 inch.	3 inch.	4 inch.	6 inch.	Total.
January					
February	2		1		3
March	4		1		5
April			1	3	4
May		1	2	1	4
June	4	1			5
July	1	1			2
August	5	1	1		7
September		1		1	2
October	4	1			5
November					
December	2			2	4
Total	22	6	6	7	41

METERS SET BY CONSUMERS, 1900.

Months.	THOMSON. Inches. Diam.							NASH. Inches. Diam.					GEM. Diam. In.	TRIDENT. Inches. Diam.						HERSEY. Diam. In.	CROWN. Diam. In.	WORTH'TON. Diam. In.	Total.
	⅝	¾	1	1½	2	3	4	⅝	¾	1	2	3	6	⅝	1	2	3	4	6	⅝	⅝	3	
Jan	36	2							1														39
Feb	62		2		1			1						1									67
March	44		4		4		2	2															56
April	151		2			1		3						44									201
May	302	1	4				2	6						41						1			357
June	107		7		3			9		1	1			17	1		1				1		148
July	49		2		1			5		1				8									66
August	19		3		1			16		1	1	1		22									64
Sept.	18		6					26		1				19	1	1			1			1	74
Oct	71	1	3	2	1			5						13		1							97
Nov	71		2		1			43		3				13	1		1						135
Dec	14	1	3				1	26		1	2		1	7									56
Totals	944	5	38	2	12	1	5	142	1	8	4	1	1	185	3	2	2		1	1	1	1	1,360

METERS SET BY WATER DEPARTMENT, 1900.

MONTHS.	THOMSON. Inches. Diam.			NASH. In. Diam.		TRIDENT. In. Diam.		HERSEY. In. Diam.		Total.
	⅝	1	1½	⅝	1	⅝	1	⅝	1	
January	144	11	1	155		135		39		485
February	188	5		72	3	3				271
March	174	3		31		30				238
April	132	3			1	14				150
May	87			42				10		139
June	24					1		3		28
July	15							1		16
August	21							1		22
September	3									3
October										
November										
December										
Totals	788	22	1	300	4	183		54		1,352

Number of Meters	in use January 1st, 1900			7,342
" "	set by Consumers in 1900		1,360	
" "	" Water Department in 1900		1,352	
Total " "	set during 1900			2,712
" " "	in use January 1st, 1901			10,054

HYDRANT STATEMENT.

For the Year Ended December 31st, 1900.

LOW SERVICE.

Month.	No.	LOCATION.
March	1	High st., east side, 300 feet north of Central ave.
April	2	N. E. corner Washington st. and Maiden lane.
	3	Washington st., east side, middle of block between Camfield st. and Camfield court.
	4	Washington st., east side, middle of block between William and Pearl sts.
	5	Washington st, east side, between Pearl and Hill sts.
	6	S. E. corner N. J. Railroad ave. and Murray st.
	7	N. E. corner N. J. Railroad ave. and Astor st.
May	8	N. W. corner Hinsdale pl. and Oraton st.
	9	S. W. corner Hinsdale pl. and Chester ave.
	10	River road, west side, opposite No. 302.
	11	S. E. corner Washington and Grafton aves.
	12	N. E. corner Washington and Chester aves.
	13	Washington ave., east side, opposite No. 160.
	14	N. E. corner Washington ave. and Hinsdale pl.
	15	Washington ave., east side, opposite No. 105.
	16	S. E. corner Washington ave., and North End terrace.
	17	Washington ave., east side, middle of block between Hinsdale pl. and Chester ave.
	18	S. W. corner Washington ave. and Winthrop st.
	19	N. W. corner Malvern and Sandford sts.
July	20	Crittenden st., south side, 200 feet west of Rowland st.
	21	Broad st., east side, opposite south side New st.
	22	N. W. corner Stone and Crane sts.
Aug.	23	N. E. corner Brinsmaid place and Brill st.
Sept.	24	S. W. corner Mt. Pleasant ave., and Gouveneur st.
Oct.	25.	Passaic st., east side, middle of block, between 3rd and 4th aves.
Nov.	26	S. W. corner Sherman ave., and Bigelow st.
	27	N. W. corner Sherman ave., and Branford st.
	28	S. W. corner Frelinghuysen ave. and Runyon st.
Dec.	29	South st., north side, opposite Bay ave.
	30	N. W. corner Lister ave. and Poplar st.

HYDRANT STATEMENT—CONTINUED.

HIGH SERVICE.

Month.	No.	LOCATION.
March	31	S. E. corner Old Bloomfield road and 3rd st.
	32	S. E. corner 2nd st. and Fredonia ave.
May	33	South 12th st., west side, middle of block between 14th and 15th aves.
	34	N. W. corner Leslie pl. and Shaw ave.
	35	North 5th st., west side, middle of block between Berkeley and Chester aves.
	36	N. W. corner 12th ave. and South 9th st.
June	37	S. W. corner Seymour and Runyon aves.
	38	Fairmount ave., west side, middle of block, between Bank and Cabinet sts.
	39	4th st., west side, 300 feet south of 2nd ave.
July	40	N. W. corner Stone and Crane sts.
	41	N. W. corner Warren and Gray sts.
Aug.	42	North 6th st.,west side, middle of block between Chester and Berkeley aves.
	43	S. W. corner Gray and Orange sts.
	44	Gray st., east side, south side M. & E. R. R.
Oct.	45	South 14th st., west side, 360 feet north of Central ave.
	46	Hedden terrace, west side, at dead end south of Clinton ave.
	47	S. W. corner North 11th and Newbold sts.
Nov.	48	S. W. corner 2nd st. and 7th ave.
	49	South 14th st., west side, middle of block, between Clinton and Madison aves.
Dec.	50	N. W. corner Hobson st. and Shaw ave.
	51	Seymour ave., west side at dead end north of Runyon ave.

Hydrants Replaced during the Year 1900.

LOW SERVICE.

Month.	No.	LOCATION.
Jan.	1	S. W. corner Mt. Pleasant ave. and Gouveneur st.
	2	S. E. corner Mt. Pleasant and 4th aves.
	3	Mt. Pleasant ave., east side, middle of block between 3rd and 4th aves.
	4	S. W. corner New York ave. and Pacific st.
Feb.	5	N. W. corner Orange and Plane sts.
	6	Ferry st., west side, 50 feet west of Lentz ave.
	7	N. E. corner Ferry and Merchant sts.
	8	Shipman st., west side, middle of block between William and Augusta sts.
	9	N. W. corner Kossuth and St. Francis sts.
	10	N. W. corner Niagara and Darcy sts.
	11	Nicholson st., west side, middle of block between Augusta and William sts.
	12	N. E. corner Ogden st. and Campbell's alley.
	13	N. W. corner Magazine and Barbara sts.
	14	S. E. corner Passaic ave. and Lexington st.
	15	Nichols st., north side, middle of block between Jefferson and Adam sts.
	16	N. E. corner Kossuth and Niagara sts.
	17	N. W. corner N. J. Railroad ave. and Mulberry st.
	18	N. E. corner Oliver st. and N. J. Railroad ave.
	19	N. W. corner Chestnut st. and N. J. Railroad ave.
	20	Washington ave., west side, 50 ft. south of Delavan ave.
March	21	Washington ave., west side, between Delavan and Elwood aves.
	22	Washington ave., west side, 75 ft. south of Elwood ave.
	23	S. W. corner St. Charles and Kossuth sts.
	24	N. W. corner Washington ave. and Elliott st.
	25	Washington ave., west side, betweeen Elliott and Halleck sts.
	26	N. W. corner Washington ave. and Halleck st.
	27	N. W. corner Washington and Montclair aves.
	28	N. W. corner Washington ave. and Irving st.
	29	Washington ave., west side, 50 ft. south of Chester ave.
	30	Verona ave., north side, between Washington ave. and River road.
	31	N. E. corner N. J. Railroad ave. and Johnson st.

HYDRANT STATEMENT—CONTINUED.

Month	No.	LOCATION.
April	32	N. E. corner Bruen and Green sts.
	33	N. W. corner Washington and Willow sts.
	34	Washington st., west side, opposite Pearl st.
	35	Washington st., west side, between William and Market sts.
May	36	Darcy st., north side, middle of block between Ashbridge and Westcott sts.
	37	S. W. corner Spring and Clay sts.
	38	Mt. Pleasant ave., east side, middle of block between Clay and Clark sts.
	39	Washington st., west side, opposite No. 246.
	40	Fillmore st., west side, middle of block between Market and Passaic sts.
June	41	N. W. corner Kossuth and Magazine sts.
	42	Kossuth st., west side, middle of block between Hamburg pl. and Niagara st.
	43	Kossuth st., west side, middle of block between Niagara and Magazine sts.
	44	N. W. corner Magazine and Berlin sts.
	45	S. W. corner Main and Kossuth sts.
	46	N. W. corner Mulberry and Emmett sts.
	47	S. E. corner Bruen and East Mechanic sts.
	48	Bay avenue, west side, at Sewer Pumping Station.
July	49	S. W. corner Broad st. and 4th ave.
	50	N. E. corner Harvey st. and Belleville ave.
	51	N. W. corner Stone st. and 7th ave.
	52	Market st., south side, 75 ft. east of Ferry st.
Aug.	53	S. W. corner Elizabeth and Niagara sts.
	54	Magazine st., west side, middle of block between Ferry and George sts.
	55	S. W. corner Magazine and Ferry sts.
	56	N. W. corner Emmett st. and N. J. Railroad ave.
Sept.	57	N. W. corner Brunswick and Miller sts.
	58	S. E. corner Crane and Wood sts.
Oct.	59	Magazine st., west side, opposite George st.
	60	S. E. corner Passaic ave. and Van Buren st.
	61	N. W. corner Magazine and Barbara sts.
	62	N. W. corner Brill and Ferry sts.
	63	N. W. corner Chestnut and Jefferson sts.
Nov.	64	Mulberry st., west side, opposite River st.
	65	Broad st., west side, middle of block between Harvey and Oriental sts.
	66	S. W. corner Broad and Harvey sts.
	67	S. W. corner Halsey and Bank sts.

HYDRANT STATEMENT—CONTINUED.

Month	No.	LOCATION.
Dec.	68	Market st., at junction of Bowery st.
	69	N. W. corner Mulberry and Murray sts.
	70	S. W. corner Ferry and Monroe sts.

HIGH SERVICE.

Month.	No.	LOCATION.
March	71	N. W. corner Sussex ave. and High st.
	72	N. W. corner Sussex ave. and Lock st.
	73	S. W. corner Bruce st. and 14th ave.
	74	Nesbitt st., west side, opposite Lemon st.
	75	N. W. corner Newark and Warren sts.
	76	S. W. corner Sussex ave. and Hoyt st.
	77	S. W. corner Warren and Summit sts.
	78	N. E. corner Baldwin and West sts.
April	79	N. W. corner West Kinney and West sts.
	80	N. W. corner Boyd st. and Waverly ave.
	81	Degraw ave., west side, middle of block between Verona and Montclair aves.
	82	N. W. corner South 10th and Tillinghast sts.
	83	N. W. corner Baldwin and Washington sts.
	84	S. W. corner West Kinney and Washington sts.
May	85	N. W. corner Blum st. and Springfield ave.
	86	South 9th st., west side, middle of block between South Orange and 13th aves.
	87	South 9th st., west side, middle of block between 12th and 13th aves.
	88	N. W. corner South 9th st. and 13th ave.
	89	North 11th st., west side, middle of block between 6th and 7th aves.
	90	N. W. corner North 11th st. and Orange st.
May	91	S. W. corner North 11th st. and 6th ave.
	92	N. E. corner 13th ave. and South 8th st.
June	93	N. W. corner South 9th st. and 9th ave.
	94	S. W. corner Myrtle ave. and Orange st.
	95	S. W. corner Myrtle and Sussex aves.
	96	N. W. corner Fairmount and South Orange aves.
	97	Fairmount ave., west side, middle of block between 13th and South Orange ave.
	98	S. W. corner Fairmount and 13th aves.
	99	Junction Warren and Orange sts.
	100	South 12th st., west side, middle of block between 15th and 16th aves.

HYDRANT STATEMENT—CONTINUED.

Month	No.	LOCATION.
June	101	South 12th st., west side, middle of block between 9th and Central aves.
	102	N. W. corner South 12th st., and Central ave.
July	103	N. W. corner Fairmount ave. and Warren st.
	104	S. W. corner Fairmount and Central aves.
	105	Johnson ave., west side, middle of block between Clinton ave. and Alpine st.
	106	S. W. corner Morton and West sts.
	107	S. W. corner Morton and Prince sts.
	108	N. W. corner Baldwin and High sts.
	109	N. E. corner Morton st. and Belmont ave.
	110	Stone st., west side, between 5th and 6th aves.
	111	Wallace st., west side, middle of block between 13th and South Orange aves.
	112	N. W. corner Wallace st and 13th ave.
	113	N. W. corner Wallace st. and South Orange ave.
Aug.	114	Orange st., north side, middle of block between Sheffield and Nesbitt st.
	115	Second st., west side, at dead end north of 7th ave.
	116	Second st., west side, at north side M. & E. R. R.
	117	Second st., middle of block, between Sussex ave. and Orange st.
	118	Elizabeth ave., east side, in front of Alms House.
	119	Somerset st., west side, middle of block, between Spruce st. and Waverly ave.
	120	N. W. corner Monmouth and Rose sts.
Oct.	121	N. E. corner 4th ave. and North 11th st.
	122	S. W. corner Madison ave. and Bergen st.
Nov.	123	N. W. corner Belmont and 18th aves.
Dec.	124	N. W. corner Mercer and High sts.
	125	S. W. corner South 19th st. and 13th ave.
	126	N. W. corner Johnson ave. and Bigelow st.

FINANCIAL STATEMENTS.

ACCOUNTING DIVISION.

Department of Water.

YEAR ENDED DECEMBER 31, 1900.

BOARD OF STREET AND WATER COMMISSIONERS OF THE CITY OF NEWARK, DEPARTMENT OF WATER.

To the Honorable, the Mayor and Common Council of the City of Newark, N. J.:

GENTLEMEN.—In accordance with Section 20 of the law creating the Board of Street and Water Commissioners of the City of Newark, which requires me to make a report of the receipts and expenditures at the close of each fiscal year, I herewith submit the following as my report of the Department of Water for the year ended December 31st, 1900:

Cash balance, December 31st, 1899	$42,594 21
Receipts from all sources	939,756 89
	$982,351 10
Less Disbursements on all accounts	923,176 67
Balance, December 31st, 1900	$59,174 43

WM. E. GREATHEAD,
Clerk of the Board.

NEWARK, N. J., February 28th, 1901.

W. E. Greathead, Clerk of the Board of Street and Water Commissioners:

DEAR SIR—I herewith submit Financial Statements and Trial Balance of the Department of Water for the year ended December 31st, 1900.

GEO. M. VAN NAME,
Cashier.

RECEIPTS FOR 1900.

Balance, January 1st, 1900		$42,594.21
Advance Water Rent Collection	$311,713.82	
Fractional Water Rent Collection	9,448.21	
Hose Collection	4,279.50	
Sprinklers Collection	3,122.00	
Building Collection	2,587.60	
Arrears Water Rent Collection	3,816.42	
Special Collection	5,045.40	
Measured Water Collection	308,490.79	
Service Collection Account	15,041.96	
Rents, Real Estate	721.25	
Penalties and Fines	3,180.06	
Sundry Personal Collection	50,534.54	
Sales on Service Account	207.00	
		718,188.55
Transfer from Fund for Storage Reservoir	76,545.76	
Appropriation	20,000.00	
Temporary Loan Bond	125,000.00	
Refunded from Pay Roll	22.58	221,568.34
		$982,351.10

DEPARTMENT OF WATER.

DISBURSEMENTS FOR 1900.

Interest and Charges	$319,155.00
East Jersey Water Company	66,093.85
Cast Iron Pipe	15,259.51
Coal and Wood	2,114.42
Monthly Pay Roll	45,468.17
Weekly Pay Roll	98,221.73
Stable Supplies	125.18
Horse Shoeing	382.05
Board and Meals	658.20
Wooden Wedges and Plugs	63.17
Hardware	312.20
Office Supplies	337.69
Electrical Fixtures	14.50
Electric Lights	442.18
Gas	110.50
General Supplies	397.58
Curb Boxes	1,457.21
Lumber	2,051.16
Lead Pipe	2,944.98
Mason Work	555.47
Mason Material	752.35
Cartage	496.12
Repairs to Tools	1,097.36
Drilling Wells	27,750.00
Solder	586.34
Gasolene and Kerosene	750.76
Tools	1,671.21
Comptometer	125.00
Plumbing Materials	424.18
Rebate Loss and Gain	60.73
Office Furniture	455.81
Counter Boxes	4.00
Meter Stops and Wastes	1,042.85
Harness Repairs	95.05
Plumbers' Supplies	1,161.31
Water Meters	25,187.70
Water Meter Parts	2,090.88
Feed, Hay, Oats and Straw	1,023.86
Hydrant Parts	178.10
Engineering Supplies	614.83
Photography	107.12
Livery, Truck, Horse and Carriage Hire	755.50
Fire Hydrants	4,662.62
Paint and Oil	424.51
Ice	159.60
Freight	262.59
Advertising	125.05
Telephone Repairs	17.05
Expert Drilled Wells	200.00
Wagon Repairs	728.68
Miscellaneous and Incidental	2,891.15
Carried forward	$632,067.66

DISBURSEMENTS—CONTINUED.

Brought forward	$632,067.60
Repairs to Buildings	86.66
Expert for Accounting Division	440.00
Stationery and Printing	3,898.15
Water Valves	5,975.32
Inspecting Castings	86.48
Repairs to Guages	23.50
Office Expense	154.38
Castings	4,937.42
Flowers	16.00
Pig Lead	7,306.22
Electrical Repairs	105.32
Lead Lined Pipe	520.05
General Expense	744.89
Telephone Service	234.45
Carting 36-inch Pipe	268 80
Repaving Streets	618.97
General Interest	616.44
Sinking Fund	131,400.00
Temporary Loan	125,000.00
New Horses	400.00
Insurance	16.50
Flushing Hydrants	215 84
Disinfectant	45.00
Expert Testimony to Value Buildings for N. S. Reservoir	100.00
Drill Taps	55.80
Engineering Experts	5,129.55
Hose	64.25
Steam Fitting	449.29
Machinist	31.56
New Harness	81.50
Addressograph, Etc., for Office	583.72
General Repairs	152.03
Court Expenses	292.92
Boarding of Horses	458 00
Royalty	600 00
Total	$923,176.67

TRIAL BALANCE.

December 31st, 1900.

Cash	$59,174.43	
Coupon Trust Fund, Nat'l State Bank..	35.00	
Coupon Bond Account		2,710,000.00
Registered Bond Account		7,107,000.00
Coupons Payable		35.00
Plumbers Drafts		178.50
Loss and Gain		2,472.76
Construction	3,618,325.38	
Pumping Stations	7,402.75	
Drilled Wells	29,883.38	
36" Main, Expended on	12,675.92	
New Storage Reservoir—Expended on..	2,646.48	
Feeders, 1900	6,844.11	
Belleville Fuel Account	1,072.50	
Belleville Engine Stores	64.74	
Belleville and High Service Machinery Stock and Fixtures	2,165.00	
Department Meters	35,152.50	
Stable Stock and Fixtures	2,658.00	
Office Furniture, Fixtures and Fittings..	7,666.33	
Water Meter Account	17,252.88	
Hydrant Account		2,002.15
Insurance	279.59	
Bond and Mortgage	600.00	
Street Main, Stock and Material	27,349.94	
General Supplies	1,754.93	
Service Account	9,148.28	
Plumbing Supplies	187.49	
Tool Account	7,497.24	
Real Estate, General	156,637.34	
Miscellaneous Labor		267.59
Maintenance, General and Repairs	8,779.61	
" Reservoir Grounds and General	1,320.36	
Maintenance, New Water Supply	13,570.20	
Street Main Extension, 1900	27,162.43	
Repair Street Mains	2,744.82	
" Hydrants	457.18	
" Drinking Fountains		124.06
" Water Meters	1,974.56	
" Keeper's House, Belleville	561.21	
" Pump House	233.43	
" S. O. Ave. Reservoir	161.38	
" Tools	1,069.03	
" Services	1,943.66	
Carried forward	$4,066,452.08	$9,822,081.06

TRIAL BALANCE CONTINUED.

Brought forward	$4,066,452.08	$9,822,081.06
Handling Material	937.23	
Setting Meters	8,056.23	
Reconstruction (Relaid and lowered)	2,446.41	
Distributing Reservoir	4,832.23	
General Expense Account	5,444.50	
Inspection	15,048.83	
Sinking Fund Account	131,400.00	
Anticipated Assets	146,731.34	
Coupon Bond Interest	197,337.50	
Registered Bond Interest	121,817.50	
General Interest	616.44	
New Water Supply	6,029,374.71	
Additional Water Supply	36,734.26	
Sale of Securities		76,545.76
Surplus and Deficiency		256,422.09
Rents Real Estate		721.25
Penalties and Fines		3,180.06
Meter Division Expense	8,277.10	
Engineer and Superintendent Expense	13,787.43	
Accounting Division Expense	28,089.11	
Stable Expense	4,357.53	
Service Account Collections		15,041.96
Advance Water Rent Collections		311,713.82
Fractional Water Rent Collections		9,448.21
Hose Collections		4,279.50
Sprinklers Collections		3,122.00
Building Collections		2,587.60
Arrears Water Rent Collections		3,816.42
Measured Water Collections		308,490.79
Special Collections		5,045.40
Sundry Personal Account Collections		50,534.54
Sundry Personal Account Charges	51,290.03	
	$10,873,030.46	$10,873,030.46

ASSETS AND LIABILITIES.

Cash Balance, December 31st, 1900.....	$59,174.43	
Property	9,985,887.28	
Accounts Receivable	146,731.34	
Coupon Trust Fund	35.00	
Registered Bonds		$7,087.000.00
Coupon Bonds		2,710,000.00
Coupons Payable		35.00
Plumbers Drafts		178.50
Surplus and Deficiency		394,614.55
	$10,191,828.05	$10,191,828.05

SCHEDULE OF PROPERTY.

DEPARTMENT OF WATER.

Belleville Pump House	$56,309.39
" Boiler House Extension	2,387.76
" Engineer & Firemen's Dwelling	22,696.52
Belleville New Chimney	10,057.24
" Keeper's House	3,192.60
" Pumping Engine No. 1	55,909.73
" Pumping Engine No. 2	55,591.95
" Pumping Engine No. 3	78,918.29
" Pumping Engine No. 4	42,607.54
" Receiving Reservoir	133,645.05
" New Boilers	15,638.31
River Wall dock and Basin	266,112.99
Driven Wells	22,275.01
Drilled Wells	36,172.98
Caisson Wells	2,453.80
Belleville Reservoir Appurtenances	8,508.93
High Service Engine House	27,847.44
High Service Engine House Extension	5,417.70
New Boiler, Clifton Avenue	6,349.82
High Service Pumping Engine No. 1	21,407.40
High Service Pumping Engine No. 2	21,630.22
High Service Pumping Engine No. 3	19,874.81
High Service Reservoir Pumps	12,609.26
High Service Reservoir, South Orange Avenue	94,585.27
Low Service Reservoir	304,039.20
Branch Brook Reservoir	54,294.15
Street Mains, General	1,637,780.55
Pump Main No. 1	92,552.57
Pump Main No. 2	47,353.54
Supply Main No. 1	152,998.38
Supply Main No. 2	81,643.96
Supply Main No. 2, Section A	49,998.90
Distributing Main No. 2	63,612.00
Extra High Service Main	33,704.66
Twelfth Ward Feeder	7,151.67
Ingraham Place Feeder	1,408.46
Bridge Street Feeder	2,244.48
Regular High Service Feeder No. 2	22,046.32
Regular High Service Feeder No. 2, Extension	12,196.63
Forest Hill Feeder	6,891.18
Roseville Feeder	23,269.29
Seventh Avenue Feeder	5,219.56
South Street Feeder	2,577.22
Fourteenth Avenue Feeder	5,389.09
Ferry Street Feeder	7,575.60
South Ninth Street Feeder	829.37
Fourteenth Avenue Feeder	1,712.86
Waverly Avenue Feeder	956.29
Carried forward	$3,639,645.94

SCHEDULE OF PROPERTY—CONTINUED.

Brought forward	$3,639,645.94	
Hawthorne Avenue Feeder	837.02	
Verona Avenue Feeder	1,915.26	
Special High Service Feeder	1,196.14	
Feeders, 1900	6,844.11	
Distributing Main No. 2 Extension	4,793.03	
Distributing Main No. 1	59.59	
High Service Main No. 1	57.50	
High Service Main No. 2	22,876.86	
Low Service Supply Main No. 3	1,364.19	
Weir at Water Shed	1,972.04	
New Storage Reservoir, Cedar Grove	3,300.10	
36" Supply Main	12,675.92	
		3,697,537.70
REAL ESTATE.		
No. 1. 128 Halsey Street	26,964.15	
No. 5, Nominal	100.00	
No. 6, 7th and Summer Avenues	4,000.00	
No. 11, Tenement, corner 8th Avenue and Sheffield Street	5,000.00	
No. 12, Ground for New City Stables	12,134.90	
No. 13, Right of Way and Alley, Millbrook sewer	75.00	
No. 14, Drift Street at Factory Street Nominal	20.00	
No. 16, Clifton Avenue Pump House	6,000.00	
No. 18, Low Service Reservoir, Nominal	1.00	
No. 28, Tract N. S. 5th Avenue, between Lake and Pond Streets	6,000.00	
No. 29, Tract N. S. 5th Avenue, between Pond and 1st Streets	6,000.00	
No. 44, Property along Duryee Street, between Sussex Avenue and Orange Street	25,000.00	
No. 52, Hecker Street, Nominal	100.00	
No. 53, South Orange Ave. Reservoir, Nominal	1.00	
No. 54, corner 14th Ave. and 9th Street	15,000.00	
No. 55, corner 14th Ave., and 8th Street	7,500.00	
No. 56, Belleville Pump House and six Houses	11,883.64	
No. 57, Opposite Pump House	1,693.92	
No. 58, Belleville Reservoir, Nominal	1.00	
No. 59, Part of Belleville Reservoir Property	532.50	
No. 60, Back of Belleville Reservoir	11,113.86	
No. 61, Portion Right of Way Supply Main No. 2	450.00	
No. 62, Portion Right of Way Supply Main No. 2	339.00	
No. 63, Portion Right of Way Supply Main No. 2	389.55	
No. 68, Recovered on Foreclosure of Mortgage	1,514.25	
New City Stable	14,823.57	
		156,637.34

INVENTORY.

Street Main, Stock and Material	18,126.91	
Fuel at Belleville	1,410.50	
Hydrants on hand	23.50	
Stable Stock and Fixtures	2,632.50	
Tools	6,107.35	
Belleville and High Service Machinery, Stock and Fixtures	2,494.50	
Office Furniture, Fixtures and Fittings	7,403.85	
Water Meters on hand	18,049.50	
Water Meters owned and set by Department	45,250.00	
Bond and Mortgage	600.00	
Insurance	238.92	
		102,337.53
New Water Supply		6,029,374.71
Total		$9,985,887.28

ACCOUNTS RECEIVABLE. December 31st, 1900.

Advance Water Rent Account	$43,834.78	
Fractional Water Rent Account	2,146.17	
Measured Water Account	61,738.88	
Sprinkler's Account	18.00	
Special Account	1,470.61	
Arrears Water Rent Account	5,186.55	
Service Collection Account	248.00	
Sundry Personal Account	32,088.35	
Total		$146,731.34

FUND FOR THE CONSTRUCTION OF A STORAGE RESERVOIR.

CASH ACCOUNT.

	Dr.	*Cr.*
Balance, January 1st, 1901		$2,906.56
Interest on Investments	$4,437.50	
Rents Real Estate	100.00	
Sale of Hay	44.50	
Sale of Corn Crib	10.00	
Sales on Charlottesburgh Tract	9.00	
Sale of Apples	2.00	
Total Receipts for 1900		4,603.00
		$7,509.56
Fidelity Trust Co., Searching Titles	$675.00	
Refunded Interest	337.50	
Charles Knight, Transcript Shorthand Notes	31.30	
Taxes	290.20	
Labor at Pequannock Water Shed	1,921.15	
Disbursements in 1901		3,255.15
Balance to Credit of Account with City Treasurer, December 31st, 1900		$4,254.41

TRIAL BALANCE.

	Dr.	*Cr.*
Cash	$4,254.41	
Bond Account	65,000.00	
Ivy Hill Property	81,828.40	
Belleville Property	13,965.35	
Charlottesburgh Property	50,670.07	
Storage Reservoir Account		$215,718.23
	$215,718.23	$215,718.23

REAL ESTATE AND SECURITIES.

Registered Newark City Water Bonds No. 9	$50,000.00
Registered Newark City Water Bonds, No. 88	15,000.00
Ivy Hill Property, South Orange, N. J.	81,828.40
Belleville, N. J., Property	13,965.35
Charlottesburgh, N. J., Property	50,670.07
	$211,463.82

AMOUNT EXPENDED ON ACCOUNT OF

NEW STORAGE RESERVOIR

AND THIRTY-SIX INCH SUPPLY PIPE LINE DURING THE YEAR 1900.

NEW STORAGE RESERVOIR.

Engineering expenses, &c	$3,318.33	
Amount paid for land	18,300.00	
Expenses of condemnation	1,490.00	
		$23,108.33

SUPPLY PIPE LINE.

Labor	$35,302.94	
Cast Iron Pipe	93,308.27	
Inspecting Pipe	400.33	
Carting Pipe	3,626.70	
Land for Right of Way	3,450.00	
Caulking Machine	490.00	
Miscellaneous Materials	10,902.60	
Expenses	1,559.00	
		149,039.84
Total		$172,148.17



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ANNUAL REPORT

OF THE

WATER DEPARTMENT

OF THE

Board of Street and Water Commissioners

OF THE

CITY OF NEWARK, N. J.

FOR THE YEAR

1901

ANNUAL REPORT

OF THE

WATER DEPARTMENT

OF THE

Board of Street and Water Commissioners

OF THE

CITY OF NEWARK, NEW JERSEY,

FOR THE YEAR ENDED DECEMBER 31, 1901.

OFFICERS AND MEMBERS.

PRESIDENT,	GEORGE M. BALLARD, 29 MILFORD AVENUE
COUNSEL,	E. LIVINGSTON PRICE, 800 BROAD STREET
CLERK OF THE BOARD,	WILLIAM E. GREATHEAD, 24 MILFORD AVENUE
ENGINEER & SUP'T. DEPT. WATER,	MORRIS R. SHERRERD, 938 BROAD STREET
CASHIER DEPT. WATER,	GEORGE M. VAN NAME, 177 ORCHARD STREET

COMMISSIONERS.	RESIDENCE.
GEORGE M. BALLARD,	No. 29 Milford Avenue.
C. V. BAUMANN,	" 385 S. Tenth Street.
WINTON C. GARRISON,	" 79 Washington Ave.
JOSEPH S. VINSON,	" 277 Walnut Street.
JOSEPH M. BYRNE,	" 11 Lincoln Park.

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To the Honorable the Mayor and Common Council of the City of Newark, N. J.

Pursuant to law, the Board of Street and Water Commissioners of the City of Newark, N. J., hereby presents the annual report of the Water Department for the fiscal year ended December 31st, 1901.

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To the Honorable the Mayor and Common Council of the City of Newark, N. J.

Pursuant to law, the Board of Street and Water Commissioners of the City of Newark, N. J., hereby presents the annual report of the Water Department for the fiscal year ended December 31st, 1901.

REPORT OF

THE ENGINEER AND SUPERINTENDENT OF THE DEPARTMENT OF WATER.

To the Board of Street and Water Commissioners of the City of Newark, N. J.

GENTLEMEN:

I herewith submit the following report of the condition and operation of the works of the Department of Water for the year ended December 31, 1901.

THE PUMPING STATIONS.

The machinery at each station has received such attention as was necessary to keep it in reasonably serviceable condition. Practically the only expense has been for one watchman at each station and for turning over the pumps about once in three months.

CONSUMPTION.

The number of new ordinary service taps made during the year, within the city limits, was 931 (an increase of 72 over last year). During the year there were two 8-inch, three 6 inch, eleven 4-inch, six 3-inch and nine 2-inch connections made, giving a total of 31 large connections made.

The following table gives the delivery of water to the distributing reservoirs, average consumption, etc., for 1901:

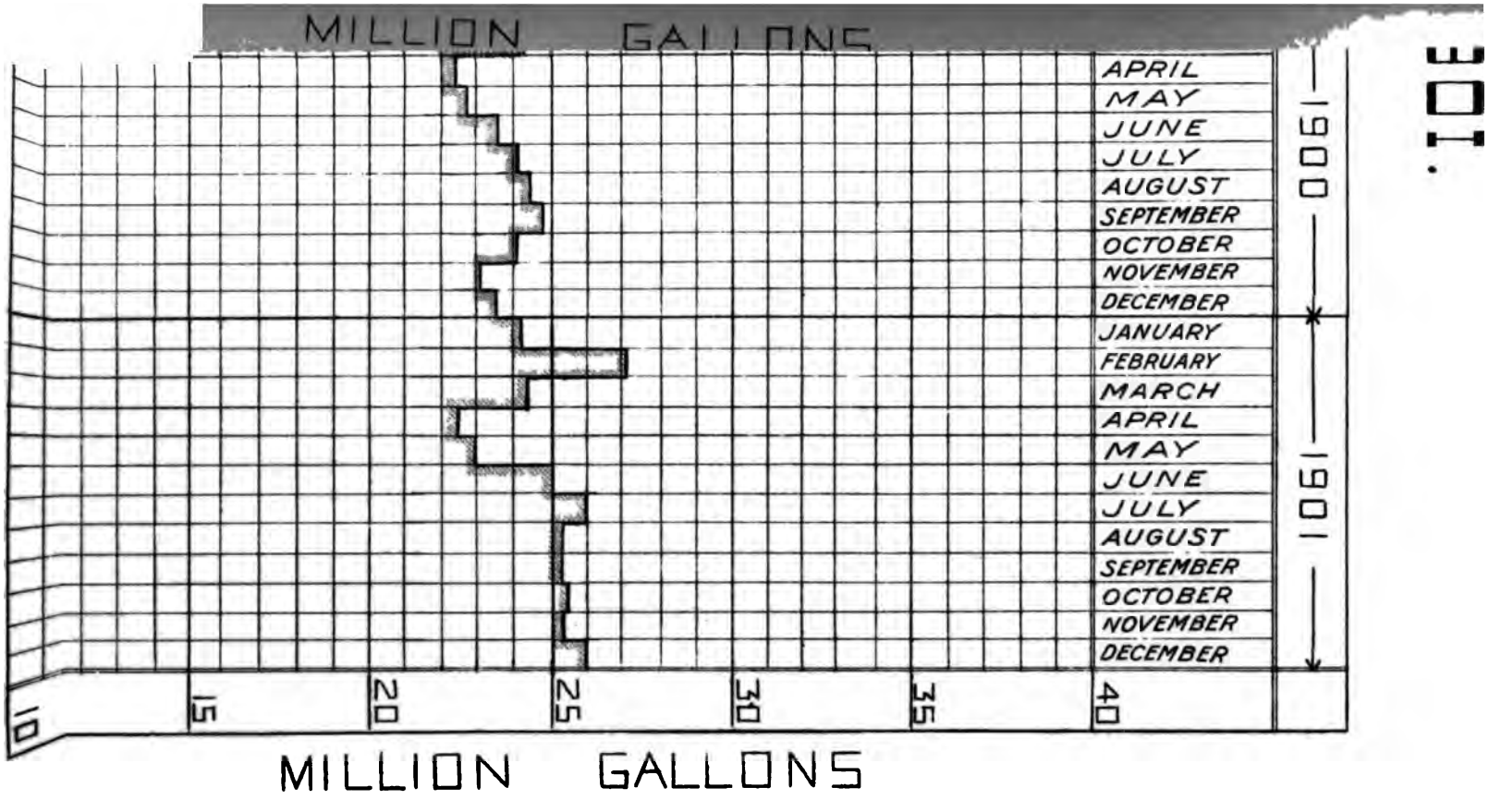
CONSUMPTION STATEMENT FOR THE YEAR

ENDED DECEMBER 31, 1901.

MONTHS. 1901	Total Consumption per month in Million Gals.	Aver'ge Daily Consumption in Million Gals.	Number of Taps at Beginning of each month.	Aver'ge Daily Consumption per Tap in Gallons.	Mean Temperature.	Rainfall in Inches.
January	750.2	24.2	34353	704	29.2	1.07
February	760.5	27.1	34420	787	23.8	.09
March	753.9	24.3	34470	705	37.2	4.70
April	675.2	22.5	34500	652	48.0	6.56
May	714.0	23.0	34559	663	57.2	5.66
June	750.8	25.0	34633	721	70.2	1.98
July	806.3	26.0	34764	748	76.7	6.73
August	786.1	25.3	34895	725	72.6	12.00
September	760.2	25.3	34992	723	66.2	1.46
October	788.8	25.4	35059	724	54.3	1.12
November	759.1	25.3	35114	721	37.7	1.46
December	808.0	26.0	35209	738	31.8	7.29
Total	9113.1					51.29

Average daily consumption	24,900,000	gallons
Average daily consumption per tap	706	"
Average daily consumption per capita, based on 265,000 population supplied	94	"
Approximate number of taps at the end of year	35,284	

The accompanying folder gives the consumption since 1892, when the gravity plant was introduced. Detailed information in regard to street mains, services, meters, etc., may be found in the appended tables.


MILLION GALLONS
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
1900
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40
MILLION GALLONS

301.

REVENUE FROM WATER.

A comparison of the amounts received and due for water alone for the years 1900 and 1901, shows the following:

Received from metered water, 1901	$378,013.12	
Received from other water rents, 1901 (Except special contracts).	320,124.98	
Total received from water rents, 1901		$698,138.10
Due from metered water, Dec. 31st, 1901		37,797.79
Due from other water rents, Dec. 31st, 1901 (Except special contracts).		50,947.01
Revenue, 1901, actual and prospective		$786,882.90
Received from metered water, 1900	$308,490.79	
Received from other water rents, 1900	340,012.95	
Total received from water rent, 1900	$648,503.74	
Due from metered water, Dec. 31st, 1900	61,738.88	
Due from other water rents, Dec. 31st, 1900	52,656.11	
Revenue, 1900, actual and prospective		$762,898.73
Increased revenue, 1901 over 1900		$23,984.17

The above comparison does not include special contracts made with the East Jersey Water Company for the supply of Montclair, and with the Orange Water Company for a portion of the supply of East Orange from which contracts $29,093.27 was received during the year 1901.

DISTRIBUTION.

The extensions to street mains in the city during the year 1901 were as follows:

37	lineal	feet	of	10-inch	pipe.
389	"	"	8	"	"
24,249	"	"	6	"	"
293	"	"	4	"	"
Total..... 25,018	lineal	feet	or	$4\frac{3888}{5280}$	miles.

Belleville township laid 850 feet of 6-inch pipe.

The total length of pipe connected with the works, is as follows:

In the City	$257\frac{3}{5}\frac{3}{2}\frac{4}{8}\frac{3}{0}$ miles
Belleville Township	$11\frac{1}{5}\frac{0}{2}\frac{4}{8}\frac{4}{0}$ miles
Vailsburgh (Columbia Heights)	$2\frac{1}{5}\frac{1}{2}\frac{1}{8}\frac{8}{0}$ miles
South Orange Ave. (Shooting Park)	$\frac{1}{5}\frac{7}{2}\frac{0}{8}\frac{0}{0}$ miles
	$270\frac{1}{5}\frac{8}{2}\frac{7}{8}\frac{4}{0}$ miles

The amount of work done in relaying was as follows:

540	lineal	feet	of 12	inch	diameter.
183	"	"	8	"	"
5,324	"	"	6	"	"
Total..... 6,047	"	"	equal to	$1\frac{7}{5}\frac{6}{2}\frac{6}{8}\frac{7}{0}$	miles.

The amount of work done in the way of lowering pipe was as follows:

200	lineal	feet	of 24	inch	diameter.
4,176	"	"	6	"	"
1,195	"	"	4	"	"

Equal to $1\frac{2}{5}\frac{9}{2}\frac{1}{8}\frac{1}{0}$ miles.

During the year 143 new hydrants were set, of these 35 were substituted in place of old hydrants; 58 were added to the total number in service, making a total of 2,202 set in the city at the end of the year.

NEW STORAGE RESERVOIR.

The contract for the construction of the Cedar Grove Reservoir was awarded to Messrs. Stewart and Abbot in August, 1901. The total of their bid based on the estimated quantities was $581,217.24. Due to the difficulty in obtaining early delivery of machinery, &c., work was hardly started before it became necessary to practically shut down for the winter. A contract was awarded to the United States Cast Iron Pipe and Foundry Company, amounting to $53,457.90 for the reservoir piping and special castings for the gate

chambers and reservoir connections. Most of the land and right-of-way for the pipe lines and outlet tunnel has been secured, the expenses incurred for this purpose during 1900 and 1901, amounted to $68,756.56.

The contract for the outlet tunnel from the reservoir was awarded in October, 1901, to the United Engineering and Contracting Company for $93,735.50.

Plans and specifications have been prepared for seven miles of sixty-inch steel pipe to connect the water shed conduits with the reservoir and to distribute the water from the reservoir to the city.

A portion of the cost of the thirty-six-inch cast iron high service supply main between the Belleville reservoir and the South Orange avenue reservoir, with which the sixty-inch steel line will connect, has been charged to the New Storage Reservoir account. During 1900 and 1901, the amount expended on this line was $160,468.98.

NEW WATER SUPPLY.

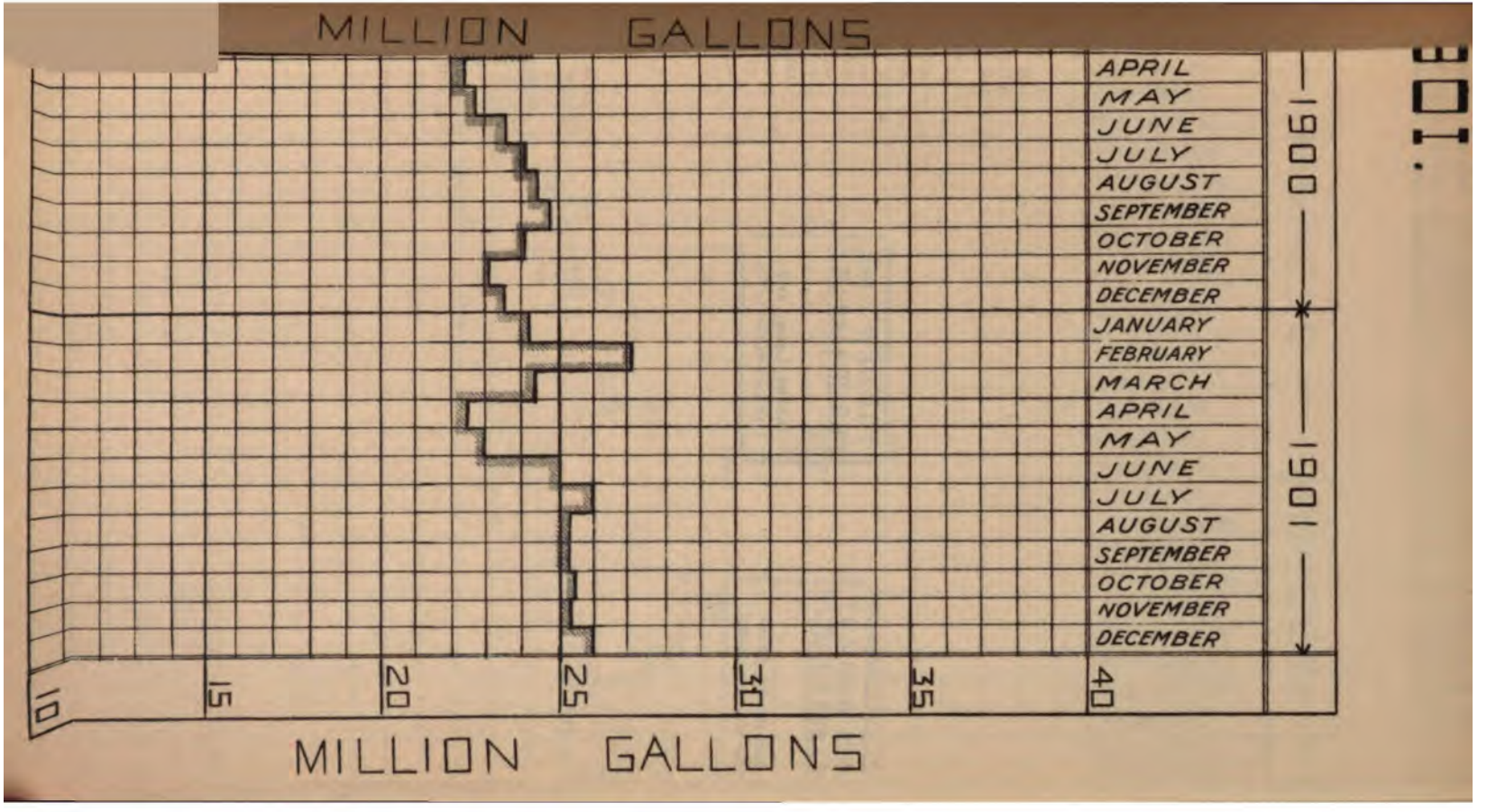
Since the settlement of the water contract with the East Jersey Water Company, the city has made an arrangement with said company for the acquirement of all the land owned by the company in the Pequannock water shed. This land to be paid for in water to be given at the option of the city from its surplus supply. By this agreement the city has obtained an additional 3,800 acres of land in the water shed around the reservoirs and along the main streams, affording increased protection from pollution and making a total of over twelve square miles owned by the city or about one-fifth of the entire water shed above the Macopin Intake. The City now owns about two-thirds of the land along the main streams below the storage reservoirs. The remaining portion should be acquired as funds become available for this purpose. A system of forest culture is recommended for the land owned by the city in the water shed, and steps to accomplish satisfactory results in this direction are now being taken.

Records of rain fall and run off of the water shed are being continued. These will be of value for reference and will be tabulated for publication in future reports.

Respectfully submitted,

M. R. SHERRERD,

Engineer and Superintendent, Department of Water.


MILLION GALLONS
APRIL
MAY
JUNE
JULY
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SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
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SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
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MILLION GALLONS

108.

STATEMENT OF PIPE LAID IN 1901.

Month 1901	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER IN INCHES. 10 in.	8 in.	6 in.	4 in.	STOPS.	HYDRANTS
Jan	Fifth st., from dead end middle of block between Chester and Berkeley aves. to 200 ft. south of Berkeley ave.....			420		2	2
"	Grafton ave., from Mt. Prospect to Clifton ave.....			307		1	1
"	Elwood ave., from Mt. Prospect to Woodside ave			364		1	1
April....	Van Buren st., from East Kinney st. north.....			72			
"	Clifton ave., from dead end south of Verona ave. south..... ...	24					
"	Lincoln ave., across Chester ave			98		2	
"	Chadwick ave., from Clinton ave. south			460		1	1
May.....	Dickerson st., across Third st.....			60			
"	Dickerson st., from main in 2d st. to west side 2d st.....			24			
"	Hedden st., from dead end south of Clinton ave. to Runyon st...			473			1
"	Eleventh ave., from South 9th to South 10th st.....			252		...	
"	Mt. Prospect ave., from Abington to Elwood ave.....			2,900		6	4
"	Frelinghuysen ave., from south side Runyon st. to about 1,000 ft. south of city line (dead end in front of E. Ward's tannery).			2,996		2	
June	Montclair ave., from Main in Summer ave. west.....			24			
"	Peshine ave., from dead end south of Madison ave. south.....			87			1
"	Summer ave., from dead end (m. of bl. between Delavan and Elwood aves.) north to Crafton ave.....			2,181		10	4
"	Harvey st., from Summer ave. to Garside place.....				238	1	
"	Seventeenth ave., from South 19th to South 20th st.; South 20th st., from 17th ave. south.			566		2	2
"	South 9th st., from dead end south of 15th ave. to 16th ave			224		1	
	Carried forward.....	24		11,508	238	29	17

STATEMENT OF PIPE LAID IN 1901.—CONTINUED.

Month 1901	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER IN INCHES. 10 in.	8 in.	6 in.	4 in.	STOPS.	HYDRANTS
	Brought forward	24		11,508	288	29	17
June	Plane st., east side from Market to north side Academy sts		62	607		4	1
"	South 13th st., from dead end south of 14th ave. south			84			
"	Wright st., from Avenue B west			308		2	1
July	Pacific st., from dead end south of South st. to Thomas st			183			1
"	Horatio st., from Courtland to Hawkins st			244		1	1
"	Malvern st., from west side Sandford st. east			113		2	
"	Dewey st., from dead end south of Bragaw av. south		96				
Aug	Brenner st., from Kent st. to South 10th st			463		1	1
"	South 12th st., from 17th to 18th aves			612		1	1
"	Albert ave., from 10 in. main in Chapel st. east			40		1	
"	Dawson st., across Pennington st			58			
Sept	Seymour ave., from Runyon st. north			233		2	
"	Westcott st., from Elizabeth to Patterson sts			171			
"	Fifth st., from Central ave. north			305		1	1
"	Lincoln ave., from 6 in. main in Elwood ave. south			60		1	
"	Connection of Park place with Saybrook place pipe				55	1	
Oct.	South st., from Adams st. west			448		1	1
"	Dewey st., from dead end south of Bragaw ave. south		231				1
"	Lake st., from Verona ave north			234		1	1
"	Hawthorne ave., from dead end east of Reeve's place east			86			
"	Oraton st., from Verona ave. south			460		1	1
	Carried forward	24	389	16,167	293	49	28

STATEMENT OF PIPE LAID IN 1901.—CONTINUED.

Month 1901	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER IN INCHES.				STOPS.	HYDRANTS
		10 in.	8 in.	6 in.	4 in.		
	Brought forward	24	389	16,167	293	49	28
Oct.	Seymour ave., from dead end north of Runyon st. north			268			
Nov.	Lincoln ave., from Belleville to Elwood aves			2,563		7	2
"	Hamburgh place, from dead end east of Avenue L east			960		2	2
"	Brenner st., from dead end west of Rose st. to Rose st			279		1	
"	Montclair ave., from Clifton ave. to Ridge st.; Clifton ave. across Montclair ave	63		327			
"	Peshine ave., from dead end north of Runyon st. to Runyon st			391		1	1
"	Runyon st , from Peshine ave. to Hunterdon st			292		0	
"	Hunterdon st., from Runyon st. south			188		1	1
"	Sandford st., from New York av. south (across Warwick st.)			332		2	1
"	Shaw av., from Leslie st. to Fabian place			744		3	1
Dec.	Fabian place, from Hawthorne ave. to Buffington st			1,065		3	3
"	Sixteenth av., from Hunterdon to Bergen st			243			1
"	North 6th st., from Second ave. north			435		1	1
	Total	87	389	24,249	293	70	41

During the past year 25,018 lineal feet of pipe have been laid in the city, of which

87 lineal feet of 10 inch diameter
389 " " 8 " "
24,249 " " 6 " "
293 " " 4 " "

} $4\frac{18998}{5280}$ miles.

STATEMENT OF PIPE RELAID IN 1901.

Month 1901.	LOCATION OF PIPE.	LENGTH IN LINEAL FT. Diameter of Pipes. 12 in.	8 in.	6 in.	Stops.	Hydrants.
April	Warren place, from New to Warren sts			535	1	1
June	Brunswick st., from Astor to Thomas sts			832	4	1
"	Ward st., from Market to Hamilton sts			788	4	1
"	South 10th st., from South Orange ave., north			462		
September	West Park st., from Halsey to Broad sts. (relaid on account of constructing sewer)			445	2	
October	N. J. Rail Road Place, east side, from East Canal to Market sts., (relaid on account of changing street)	540	20			
"	Franklin st., from Broad to Mulberry sts			904	4	2
November	N. J. R. R. ave., west side, from about 40 ft. north of Green st., to 20 ft. south of Elm st		71	530		
December	Ogden st., from 6 inch pipe in Carlisle Place, north			67		
"	Commerce st., from N. J. Rail Road Place, east		92			
"	N. J. R. R. ave., west side from E. Kinney st., 250 ft. south of Walnut st			761	4	
		540	183	5324	19	5

During the past year 6047 lineal feet of pipe have been relaid in the city of which

540 lineal feet of 12 inch diameter
183 " of 8 " "
5324 " of 6 " "
} $1\frac{767}{5280}$ miles.

STATEMENT OF PIPE LOWERED IN 1901.

Month 1901	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. Diameter in inches.		
		24 in.	6 in.	4 in.
April	Halleck st., from Washington ave. 476 ft. west		476	
"	Chester ave., between Lincoln and Summer aves		300	
May	Charlton st., between West Kinney and Montgomery sts		250	
"	" " " " " Morton sts		280	
June	Summer ave., from 190 ft. north of Chester ave. to 25 ft. south of Delavan ave		500	
"	Milton st., from Wickliffe to Boston sts			310
"	Hampden st., from Wickliffe to Boston sts			310
"	Brunswick st., from Wright to Astor sts		800	
"	Brunswick st., from Thomas st. to Pennsylvania ave		340	
"	South 10th st., between South Orange and 13th aves			125
"	South 9th st., from No. 416 to No. 436		250	
July	Summer ave., from Bryant Terrace north	200		
August	Halleck st., east of Summer ave		75	
"	Clayton st., from Barclay st. to 170 ft. east of Broome st			450
September	Third st., from 135 ft. south of 1st ave. to 375 ft. north of 1st ave		570	
October	South 10th st., from 12th ave. south		335	
	Total	200	4,176	1,195

During the past year 5,571 lineal feet of pipe have been lowered in the city, of which

200 lineal feet of 24 inch diameter
4,176 " " 6 " "
1,195 " " 4 " "
} = $1\frac{291}{5280}$ miles.

PIPES LAID, RELAID AND LOWERED. Year Ended December 31, 1901.

	LENGTH IN LINEAL FEET.						Total.	Valves.	Hydrants.
	24 in.	12 in.	10 in.	8 in.	6 in.	4 in.			
Pipe Laid. (Extensions)			87	389	24,249	293	25,018	70	41
Pipe Relaid. Substitution of large for small pipe, and replacing old horizontal cast pipe		540		183	4,420		5,143	15	3
Pipe Lowered, on account of freezing	200				4,176	1,195	5,571		
Miscellaneous. Valves on hydrants, substitution for old broken valves and replaced hydrants								120	58
Total	200	540	87	572	32,845	1,488	35,732	205	102

Total Pipe Laid, Relaid and Lowered during the year..... 36,636 ft.=$6\frac{4}{5}\frac{2}{2}\frac{5}{8}\frac{6}{0}$ miles.

Total Mileage of Pipe connected with the works at the year ended, 1901...$271\frac{8}{5}\frac{7}{2}\frac{5}{8}\frac{6}{0}$ miles.

SERVICES FROM JANUARY 1, 1901, TO JANUARY 1, 1902.

⅝-INCH SERVICES. MONTHS	No. of New Services	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
January	45	1	2	2	47	866	$718.00
February	34	5	0	0	34	880	527.00
March	57	0	0	0	57	1,195	850.00
April	99	6	0	2	101	2,431	1,470.00
May	134	3	1	3	137	2,670	1,959.00
June	128	7	2	2	130	2,899	1,888.00
July	63	5	0	0	63	1,487	998.00
August	59	5	1	1	60	1,439	897.00
September	61	4	1	1	62	1,187	865.00
October	108	2	1	1	109	1,937	1,683.00
November	87	13	0	0	87	1,263	1,192.00
December	75	7	0	0	75	1,428	1,054.00
Totals	950	58	8	12	962	19,682	14,101.00

SERVICES FROM JANUARY 1, 1901, TO JANUARY 1, 1902.

1-INCH SERVICES. MONTHS.	No. of New Services.	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
January	0	0	0	0	0	0	$00.00
February	2	0	0	0	2	21	40.00
March	3	0	0	0	3	22	60.00
April	3	0	0	0	3	60	60.00
May	5	0	0	0	5	153	100.00
June	8	0	0	0	8	102	160.00
July	5	0	0	0	5	112	100.00
August	4	0	0	0	4	38	80.00
September	2	0	0	0	2	19	80.00
October	8	0	0	0	8	234	160.00
November	10	0	0	0	10	183	200.00
December	3	0	0	0	3	65	60.00
Totals	53	0	0	0	53	1009	$1100.00

RECAPITULATION, 1901.

SIZE.	No. of New Services.	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
$\frac{5}{8}$-Inch	950	58	8	12	962	19,682	$14,101.00
1 "	53	0	0	0	53	1,009	1,100.00
Totals	1,003	58	8	12	1,015	20,691	$15,201.00

SPECIAL SERVICE CONNECTIONS FROM JANUARY 1, 1901, TO JANUARY 1, 1902.

MONTH. 1901.	2 inch.	3 inch.	4 inch.	6 inch	8 inch.	Total.
January			1		1	2
February	1					1
March	2	1	2		1	6
April	1	1	1			3
May			3			3
June						0
July	1		1			2
August	1					1
September				1		1
October	2	1	1			4
November		3	2	1		6
December	1			1		2
Totals	9	6	11	3	2	31

METERS SET BY CONSUMERS, 1901.

Months. 1901.	THOMSON—LAMBERT. Inches. Diam.								NASH. Inches. Diam.				GEM. In. Di.		CROWN. In. Di.	TRIDENT. Inches. Diam.							HERSEY In. Di.	TOTAL.
	5/8"	3/4"	1"	1½"	2"	3"	4"	6"	5/8"	3/4"	1"	2"	2"	6"	1"	5/8"	3/4"	1"	1½"	3"	4"	6"	5/8"	
Jan	23		1	1					14		2	1				2								44
Feb	21								3		1					3					1	1		30
March	17			1					19		1	1				4					2			45
April			2		1				68							68				2				141
May	23			1					2		3					333					1			363
June	14								15		6					85								120
July		1							91		3	1	1		1			1						99
Aug									83			1												84
Sept			2				1	1	76		3	1						1	1					86
Oct	1					1			107		5	2							2	1				119
Nov	55	1	2	1		1	1		28	1	2					13							110	215
Dec	10										3	1		1		86							1	102
Totals	164	2	7	4	1	2	2	1	506	1	29	8	1	1	1	594	2	3	1	2	4	1	111	1448

Number of Meters in use January 1st, 1901	10,054
Total number of Meters set during 1901	1,448
Total number of Meters in use January 1st, 1902	11,502

HYDRANT STATEMENT

For the Year Ending December 31st, 1901.

LOW SERVICE.

Month.	No.	LOCATION.	Diameter.
Jan.	1	Lister ave., north side, in front No. 28.....	6 inch.
	2	N. E. corner Grafton ave. and Oraton st.....	4 "
April	3	S. E. corner Chapel st. and Lister ave.....	6 "
	4	Warren pl., w. s., between New and Warren sts.	6 "
June	5	N. W. corner Ward and Mechanic sts.....	4 "
	6	N. W. corner Brunswick and Parkhurst sts..	6 "
	7	N. E. corner Brunswick and Thomas sts.....	6 "
	8	N. E. corner Plane and Campbell sts.....	6 "
	9	Summer ave., w. s., middle of block, between Chester and Delevan aves.....	6 "
	10	Wright st., n. s., between Avenues A and B..	6 "
July	11	Hawkins st., w. s., opposite Horatio st.....	6 "
	12	N. W. corner Summer and Elwood aves....	6 "
	13	N. W. corner Summer and Fredonia aves....	6 "
	14	S. W. corner Pacific and South sts.....	6 "
Oct.	15	South st., s. s., between Adams & Jefferson sts.	6 "
	16	S. E. corner Franklin st. and Vrooms alley...	6 "
	17	Franklin st., n. s., 200 ft. west of Mulberry st..	6 "
	18	Oraton st., w. s., 400 ft. south of Verona ave...	6 "
Nov.	19	Lincoln ave., w. s., between Delevan and Elwood aves.....	6 "
	20	Hamburg pl., w. s., between Avenue L and N. J. Central R. R.....	6 "
	21	Hamburg pl., s. s., east of N. J. Central R. R..	6 "
	22	S. W. corner Sandford and Warwick sts.....	6 "

HIGH SERVICE.

Month.	No.	LOCATION.	Diameter.
Jan.	1	5th st., w. s., between Berkeley and Abington aves.....	6 inch.
	2	N. W. corner 5th st. and Berkeley ave.....	6 "
	3	N. E. corner Grafton and Clifton aves.....	6 "
	4	N. W. corner Elwood and Woodside aves.....	6 "
March	5	S. E. corner Bloomfield ave. and S. 6th st.....	6 "

HRDRANT STATEMENT—Continued.

Month.	No.	LOCATION.	Diameter.
	6	N. W. corner Grafton ave. and 4th st.....	6 "
	7	Mill st., Belleville, n. s., opposite 3rd st.....	6 "
	8	Receiving Reservoir, Belleville.....	6 "
	9	Clinton ave., n. s., west of S. 20th st., at City Line	4 "
April	10	Hunterdon st., w. s., middle of block, between Springfield and 17th aves.....	4 "
	11	Milford ave., w. s., middle of block, between Bigelow and Runyon sts.....	6 "
	12	Milford ave., w. s., middle of block, between Bigelow and Alpine sts.....	6 "
May	13	Chadwick ave., w. s., 450 ft. south of Clinton ave.	6 "
	14	N. W. corner Hedden Terrace and Runyon st.	6 "
	15	Mt. Prospect ave., e. s., middle of block, between Berkeley and Chester aves.....	6 "
	16	Mt. Prospect ave., e. s., middle of block, between Chester and Delavan aves.....	6 "
	17	Mt. Prospect ave., e. s., middle of block, between Delevan and Elwood aves.....	6 "
June	18	Peshine ave., w. s., south of Madison ave.....	6 "
	19	S. 20th st., w. s., south of 17th ave.....	4 "
	20	S. W. corner S. 20th st. and 17th ave.....	4 "
	21	S. 9th st., w. s., middle of block, between 14th and 15th aves.....	4 "
Aug.	22	N. W. corner Brenner and Kent sts.....	6 "
	23	S. W. corner S. 12th st. and 17th ave.....	6 "
	24	N. W. corner 5th st. and Central ave.....	6 "
Oct.	25	Dewey ave., w. s., between Bragaw and Shaw aves	6 "
	26	S. E. corner Elizabeth ave. and Clifton st.....	4 "
	27	Lake st., w. s., 200 ft. north of Verona ave....	6 "
Nov.	28	S. 10th st., w. s., middle of block, between 11th and Central aves.....	4 "
	29	N. W. corner Peshine ave. and Runyon st.....	6 "
	30	S. W. corner Hunterdon and Runyon sts.....	6 "
	31	N. E. corner Shaw ave. and Fabian pl.....	6 "
Dec.	32	S. W. corner Fabian pl. and Nye ave.....	4 "
	33	S. W. corner Fabian pl. and Hawthorne ave..	6 "
	34	N. W. corner Fabian pl. and Buffington st.....	4 "
	35	N. E. corner 16th ave. and Bergen st.....	6 "
	36	N. 6th st., w. s., middle of block, between 2nd and 1st aves.....	6 "

Hydrants Replaced During the Year 1901.

LOW SERVICE.

Month.	No.	LOCATION.	Diameter.
Feb.	1	N. E. corner Camp and Broad sts	4 inch.
	2	S. W. corner High st. and 7th ave	4 "
March	3	N. W. corner N. J. R. R. ave. and Elm st	4 "
	4	N. W. corner ave. C and Astor st	4 "
	5	N. E. corner State and Boyden sts	4 "
	6	N. W. corner State and High sts	4 "
	7	S. E. corner Nassau and Boyden sts	4 "
	8	N. W. corner Nassau and High sts	4 "
April	9	N. W. corner ave. C and Wright st	4 "
	10	N. W. corner Gillette pl. and Broad st	4 "
	11	S. W. corner Gillette pl. and Pennsylvania ave.	4 "
	12	S. E. corner Gillette pl. and Sherman ave	4 "
	13	Halleck st., n. s., middle of block, between Washington and Summer aves	4 "
	14	N. W. corner Chester and Lincoln aves	4 "
	15	Fulton st., s. s., middle of block, between Broad and Front sts	4 "
May	16	Saybrook pl., s. s., at dead end, east of Park pl.	4 "
June	17	St. Francis st., w. s., between George and Komorn sts	4 "
	18	S. W. corner Monroe and Market sts	4 "
	19	S. W. corner Monroe and Downing sts	4 "
	20	Monroe st., w. s., middle of block, between Ferry and Lafayette sts	4 "
	21	S. W. corner Hamburg pl. and Gotthardt st.	4 "
	22	Brunswick st., n. s., middle of block, between Wright and Astor sts	4 "
	23	S. W. corner Adams and Ferry sts	4 "
	24	N. W. corner Plane and Market sts	4 "
July	25	Front st., n. s., at Ballantine's office	4 "
	26	Chapel st., w. s., 200 ft. north of Morris Canal	4 "
	27	Chapel st., w. s., opposite Albert ave	4 "
	28	Pennington st., n. s., middle of block, between N. J. R. R. ave. and Hermon st	4 "
	29	William st., n. s., between Halsey and Washington sts	4 "
	30	N. E. corner Pennington st. and N. J. R. R. ave.	4 "

HYDRANT STATEMENT—CONTINUED.

Month.	No.	LOCATION.	Diameter.
	31	S. W. corner Chapel st. and Passaic ave.....	4 "
Sept.	32	N. W. corner Hermon and Pennington sts....	4 "
	33	N. E. corner Elm rd. and Gotthardt st.....	4 "
	34	N. W. corner McWhorter and Chestnut sts....	4 "
	35	N. E. corner Park pl. and East Park st.....	4 "
	36	South st., n. s., between N. J. R. R. ave. and Hermon st.....	4 "
Oct.	37	S. E. corner Plane and Orange sts.....	4 "
Dec.	38	Polk st., e. s., between Ferry and Clover sts....	4 "
	39	S. W. corner St. Francis and George sts.....	4 "
	40	S. W. corner Market and Adams sts.....	4 "
	41	N. W. corner E. Kinney st. and N. J. R. R. ave.	6 "

HIGH SERVICE.

Month.	No.	LOCATION.	Diameter.
March	1	Second st., w. s., middle of block, between Sussex ave. and Dickerson st.....	4 inch.
	2	S. W. corner Second st. and Sussex ave.....	4 "
	3	S. 10th st., w. s., middle of block, between 11th and 12th aves.....	4 "
	4	S. W. corner Third st. and First ave.....	4 "
	5	N. W. corner Lemon and Sheffield sts.....	4 "
	6	Lemon st., n. s., between Sheffield and Nesbitt sts.....	4 "
April	7	N. W. corner Mt. Prospect and 7th aves.....	4 "
	8	Mt. Prospect ave., w. s., middle of block, between 7th and 6th aves.....	4 "
	9	S. E. corner First st. and Central ave.....	4 "
May	10	N. W. corner Charlton and Montgomery sts..	4 "
	11	Third st., e. s., between Sussex ave. and Orange st.....	4 "
	12	Camden st., w. s., middle of block, between 12th and 13th aves.....	4 "
	13	N. W. corner Charlton and West Kinney sts..	4 "
	14	Fairmount ave., w. s., middle of block, between 15th and 16th aves.....	4 "
	15	N. E. corner New and Wilsey sts.....	4 "
	16	N. W. corner Mt. Prospect and Bloomfield aves.	4 "
	17	Hampden st., n. s., middle of block, between Wickliffe and Boston sts.....	4 "
June	18	N. W. corner S. 10th st. and 12th ave.....	4 "
	19	S. W. corner Orange and Hudson sts.....	4 "
	20	S. W. corner S. 10th st. and 13th ave.....	4 "

HYDRANT STATEMENT—CONTINUED.

Month.	No.	LOCATION.	Diameter.
	21	South 10th st., w. s., middle of block, between South Orange and 13th aves.	6 "
	22	S. W. corner Jacob st. and 16th ave.	4 "
July	23	Clinton Ave., n. s., opposite Johnson ave.	4 "
	24	N. W. corner S. 9th st. and 14th ave.	4 "
Aug.	25	N. W. corner Chester ave. and N. 6th st.	4 "
	26	Littleton ave., w. s., middle of block, between 13th and 12th aves.	4 "
	27	N. W. corner Clayton and Barclay sts.	4 "
	28	N. W. corner Clayton and West sts.	4 "
	29	N. E. corner Baldwin and Broome sts.	4 "
	30	N. E. corner 18th ave. and S. 12th st.	4 "
Sept.	31	N. W. corner Bergen and Cabinet sts.	4 "
	32	N. W. corner Littleton and S. Orange aves.	4 "
	33	N. E. corner Central ave. and Colden st.	4 "
	34	N. W. corner Hunterdon st. and 17th ave.	4 "
	35	Jay st., e. s., between Orange st. and Sussex ave.	4 "
	36	Colden st., w. s., south of Warren, at Morris Canal	4 "
	37	8th ave., n. s., middle of block, between Clifton ave. and M. & E. R. R. ave.	4 "
	38	8th ave., n. s., 100 ft. east of M. & E. R. R. ave.	4 "
	39	S. E. corner Jay and Orange sts.	4 "
	40	N. W. corner West and Montgomery sts.	4 "
Oct.	41	N. W. corner S. 10th st. and 11th ave.	4 "
	42	N. W. corner Newark and Academy sts.	4 "
Dec.	43	S. W. corner West and Mercer sts.	4 "
	44	Third st., w. s., middle of block, between 6th and 7th aves.	4 "

Hydrants Removed during the Year 1901.

LOW SERVICE.

Month.	No.	LOCATION.	Diameter.
May	1	N. W. corner Chester and Summer aves. to N. W. corner Summer and Chester aves.....	6 inch.
	2	N. W. corner Mulberry and Thomas sts. to N. E. corner Mulberry and Thomas sts.....	4 "
	3	S. E. corner Broad and Lafayette sts. to N. E. corner Broad and Lafayette sts.....	4 "
Oct.	4	N. W. corner Lincoln ave. and May st. to N. W. corner May st. and Lincoln ave.....	4 "
	5	N. E. corner N. J. R. R. pl. and Commerce st. to S. E. corner N. J. R. R. pl. and Commerce st.....	6 "
Nov.	6	S. W. corner N. J. R. R. ave. and Lafayette st. to N. W. corner N. J. R. R. ave. and Lafayette st.....	6 "
	7	N. W. corner N. J. R. R. ave. and Green st. to N. W. corner Green st. and N. J. R. R. ave.....	4 "
	8	N. W. corner N. J. R. R. ave. and Elm st. to S. W. corner N. J. R. R. ave. and Elm st.	6 ".
Dec.	9	N. E. corner Ogden st. and Carlisle pl. to 25 ft. south of it.....	4 "
	10	N. W. corner N. J. R. R. ave. and Mulberry pl. to N. W. corner Mulberry pl. and N. J. R. R. ave.....	6 "
	11	N. W. corner N. J. R. R. ave. and Cottage st. to N. W. corner Cottage st. and N. J. R. R. ave.....	6 "

HIGH SERVICE.

May	1	N. E. corner Third st. and Sussex ave. to N. E. corner Sussex ave. and Third st.....	4 "

HYDRANT STATEMENT—CONTINUED.

RECAPITULATION.

New Hydrants set on Low Service	22
" " set on High Service	36
" " replacing old on Low Service	41
" " replacing old on High Service	44
Total new hydrants set, 1901	143

The total number of hydrants connected with the works at the end of the year was:

In the City on Low Service	1,036	
In the City on High Service	1,166	
Total in the City		2,202
At the Belleville Pumphouse and Reservoir		4
Township of Belleville		83
Township of South Orange		1
Columbia Heights		14
		2,304

FINANCIAL STATEMENTS.

ACCOUNTING DIVISION.

Department of Water.

YEAR ENDED DECEMBER 31, 1901.

BOARD OF STREET AND WATER COMMISSIONERS OF THE CITY OF NEWARK, DEPARTMENT OF WATER.

To the Honorable, the Mayor and Common Council of the City of Newark, N. J.:

GENTLEMEN—In accordance with Section 20 of the law creating the Board of Street and Water Commissioners of the City of Newark, which requires me to make a report of the receipts and expenditures at the close of each fiscal year, I herewith submit the following as my report of the Department of Water for the year ended December 31st, 1901:

Cash Balance, December 31st, 1900	$59,174.43
Receipts from all sources	830,821.20
	$889,995.63
Less Disbursements on all accounts	795,896.82
Balance, December 31st, 1901	$94,098.81

WM. E. GREATHEAD,
Clerk of the Board.

NEWARK, N. J., February 28th, 1902.

W. E. Greathead, Clerk of the Board of Street and Water Commissioners:

DEAR SIR—I herewith submit Financial Statements and Trial Balance of the Department of Water for the year ended December 31st, 1901.

GEO. M. VAN NAME,
Cashier.

RECEIPTS FOR 1901.

Balance, January 1st, 1901		$59,174.43
Advance Water Rent Collection	$305,722.58	
Hose Collection	4,307.00	
Fractional Water Rent Collection	2,168.09	
Sprinklers' Collection	2,587.00	
Building Collection	3,427.85	
Special Water Rent Collection	29,093.27	
Arrears Water Rent Collection	1,912.55	
Measured Water Collection	378,013.12	
Service Collection Account	15,006.00	
Sales on Service Account	100.00	
Penalties and Fines	2,998.10	
Rents, Real Estate	935.00	
Sundry Personal	64,550.64	
		810,821.20
Appropriation		20,000.00
Total		$889,995.63

DEPARTMENT OF WATER.

DISBURSEMENTS FOR 1901.

Interest-Registered and Coupon Bonds	$399,955.00
Monthly Pay Roll	47,225.00
Weekly Pay Roll	89,389.07
Cast Iron Pipe	10,604.01
Lead Pipe	3,616.28
Pig Lead	3,676.61
Castings	4,511.58
Curb Stops	1,091.12
Curb Boxes	1,730.92
Valves	2,259.94
Water Meters	5,462.00
Fire Hydrants	3,525.00
Solder	191.25
Jute	48.44
Iron and Wooden Plugs	120.13
Drinking Fountains	429.00
Paint, Oil, Etc.	632.89
Gasoline and Oil	430.72
Hardware	503.36
Freight	170.24
Coal and Wood	445.30
Meter Repair Parts	1,305.08
Hydrant Repair Parts	88.50
Tools	297.51
Hay, Feed, Oats, Etc.	1,255.47
Board of Horses	843.00
Stable Supplies	213.21
Horse Shoeing	527.43
Repairs to Wagons	615.13
Repairs to Harness	225.97
Veterinary	14.00
New Wagons	720.00
New Harness	104.00
New Horses	865.00
Truck Hire	77.50
Carting	7.50
Livery and Board	345.70
Plumbing Supplies	679.71
General Supplies	1,571.72
General Expenses	553.30
Ice	81.85
Hose	215.20
Registering Accountant	375.00
Advertising	107.55
Printing and Stationery	2,466.96
Office Supplies	141.00
Board and Meals	297.40
Office Furniture	472.48
Refunded Payments	138.48
Extra Office Work	350.00
Sinking Fund Payments	172,400.00
Carried forward	$703,373 51

DISBURSEMENTS—CONTINUED.

Brought forward	$703,373.51
Addressograph Supplies	76.18
Typewriter	90.00
Expert Accountant	750.00
Awnings	76.10
Mason Work and Material	2,222.74
Telephone Service	1,562.53
Machinist	33.78
Steam Gauges	12.00
Engineering Supplies	87.49
Photography and Supplies	87.16
Clay Pipe	15.74
Rubber Goods	244.56
Lumber	698.69
Repaving Street Cuts	543.51
Coke	36.00
Inspecting Pipe and Castings	194.80
Survey and Engineering	245.00
Drafting	17.50
Consulting Engineer	541.66
Court Expenses	148.09
Maintenance Telephone Lines	124.50
Legal Services	15,000.00
Making and Correcting Maps	333.00
Searching and Examining Titles	837.00
Commission on Sale of Real Estate	131.70
Machine Work	28.64
Royalty on Tapping Machine	600.00
Tax and Assessments	983.75
Insurance	28.50
Damages from New Water Supply	100.00
Electric Light	392.18
Gas	118.80
Land for Drilled Wells	1,670.00
Glazing	12.93
Repairs, Tools	1,030.29
Repairs to Furniture	23.23
Repairs, General	349.64
Repairs to Buildings	108.05
Repairs to Telephones	85.41
Electrical Repairs	84.94
Petty Expenses, Accounting Division	1,432.99
Petty Expenses, Superintendent and Engineer's Division	1,364.23
Total	$795,896.82

TRIAL BALANCE.

December 31st., 1901.

Cash	$94,098.81	
Construction	2,940,485.68	
Coupon Trust Funds	35.00	
Coupon Bond Account		$2,710,000.00
Registered Bond Account		7,122,000.00
Coupons Payable		35.00
Plumbers' Drafts		178.50
Belleville Fuel Account	159.00	
Stable Stock and Fixtures	2,732.00	
Office Furniture, Fixtures and Fittings	8,550.50	
Water Meter Account	4,375.00	
Department Meters	45,610.00	
Hydrant Account	188.00	
Insurance	119.46	
Bond and Mortgage	600.00	
Street Mains, Stock and Material	17,021.50	
Real Estate, General	114,793.09	
Tool Account	9,913.90	
Repair Water Meters	509.50	
Surplus and Deficiency	432,684.44	
New Water Supply	6,029,374.71	
Service Collection Account	430.00	
Advance Water Rent Collection Account	43,998.94	
Fractional Water Rent Collection Account	1,176.40	
Building Collection Account	23.51	
Special Water Rent Collection Account	739.09	
Measured Water Collection Account	37,797.75	
Arrears Water Rent Collection Account	5,748.16	
Sundry Personal Collection Account	41,049.06	
Total	$9,832,213.50	$9,832,213.50

ASSETS AND LIABILITIES.

Cash Balance, December 31st, 1901	$94,098.81	
Property	9,174,432.34	
Accounts Receivable	130,962.91	
Coupon Trust Fund	35.00	
Coupon Bonds		$2,710,000.00
Registered Bonds		7,122,000.00
Coupons Payable		35.00
Plumbers' Drafts		178.50
Surplus and Deficiency	432,684.44	
Total	$9,832,213.50	$9,832,213.50

SCHEDULE OF PROPERTY.

DEPARTMENT OF WATER.

Belleville Pump House	$25,000.00
" Boiler House Extension	2,000.00
" Engineer & Firemen's Dwellings	10,000.00
Belleville New Chimney	5,500.00
" Keeper's House	1,500.00
" Pumping Engine No. 1	5,000.00
" Pumping Engine No. 2	5,000.00
" Pumping Engine No. 3	15,000.00
" Pumping Engine No. 4	20,000.00
" Receiving Reservoir	133,645.05
" New Boilers	15,638.31
River Wall Dock and Basin	25,000.00
Driven Wells	22,275.01
Drilled Wells	36,172.98
Cassion Wells	2,453.80
Belleville Reservoir Appurtenances	8,508.93
High Service Engine House	15,000.00
High Service Engine House Extension	2,500.00
New Boiler, Clifton Avenue	2,000.00
High Service Pumping Engine No. 2	5,000.00
High Service Pumping Engine No. 3	5,000.00
High Service Reservoir, South Orange Avenue	94,585.27
Low Service Reservoir	258,433.32
Street Mains, Genera	1,579,248.24
Pumping Main No. 1	87,924.95
Pumping Main No. 2	44,985.87
Supply Main No. 1	145,348.47
Supply Main No. 2	77,561.77
Supply Main No. 2, Section A	47,498.96
Distributing Main No. 2	60,431.40
Extra High Service Main	32,019.43
Twelfth Ward Feeder	6,794.09
Ingraham Place Feeder	1,338.04
Bridge Street Feeder	2,132.26
Regular High Service Feeder No. 2	20,944.01
Regular High Service Feeder No. 2, Extension	11,586.80
Forest Hill Feeder	6,546.63
Roseville Feeder	22,105.83
Seventh Avenue Feeder	4,958.59
South Street Feeder	2,448.36
Fourteenth Avenue Feeder	5,119.64
Ferry Street Feeder	7,196.82
South Ninth Street Feeder	787.91
Fourteenth Street Feeder	1,627.22
Waverly Avenue Feeder	908.48
awthorne Avenue Feeder	795.17
Verona Avenue Feeder	1,819.50
Special High Service Feeder	1,136.34
Carried forward	$2,888,477.45

SCHEDULE OF PROPERTY—CONTINUED.

Brought forward	$2,888,477.45	
Feeders, 1900	6,501.91	
Feeders, 1901	53.79	
Distributing Main No. 2, Extension	4,553.38	
Distributing Main No. 1	56.62	
High Service Main No. 1	54.63	
High Service Main No. 2	21,733.02	
Low Service Supply Main No. 3	1,295.99	
Weir at Water Shed	1,577.64	
New Storage Reservoir Account	3,315.48	
Thirty-six (36) Supply Main	12,865.77	
		$2,940,485.68
REAL ESTATE.		
No. 1, 128 Halsey Street	$26,964.15	
No. 5, Nominal	100.00	
No. 6, Seventh and Summer Aves	4,000.00	
No. 12, Ground for New City Stables	12,134.90	
No. 13, Right of Way and Alley, Millbrook Sewer	75.00	
No. 14, Drift Street at Factory Street, Nominal	20.00	
No. 16, Clifton Avenue Pump House	6,000.00	
No. 18, Low Service Reservoir, Nominal	1.00	
No. 52, Hecker Street, Nominal	100.00	
No. 53, South Orange Avenue Reservoir, Nominal	1.00	
No. 54, Corner 14th Ave. and Ninth St.	15,000.00	
No. 55, Corner 14th Ave. and Eighth St.	7,500.00	
No. 56, Belleville Pump House and six Houses	11,883.64	
No. 57, Opposite Pump House	1,693.92	
No. 58, Belleville Reservoir, Nominal	1.00	
No. 59, Part of Belleville Reservoir Property	532.50	
No. 60, Back of Belleville Reservoir Property	11,113.86	
No. 61, Portion Right of Way, Supply Main No. 2	450.00	
No. 62, Portion Right of Way, Supply Main No. 2	339.00	
No. 63, Portion Right of Way, Supply Main No. 2	389.55	
No. 68, New City Stables	14,823.57	
Land for Drilled Wells, Belleville, N. J.	1,670.00	
		114,793.09

INVENTORY.

Street Main, Stock and Material	$17,021.50	
Hydrants on Hand	188.00	
Water Meters on Hand	4,375.00	
Meter Repair Account	509.50	
Tools	9,913.90	
Stable Stock and Fixtures	2,732.00	
Office Furniture, Fixtures and Fittings	8,550.50	
Fuel at Belleville	159.00	
Water Meters owned and set by Department	45,610.00	
Insurance	119.46	
Bond and Mortgage	600.00	89,778.86
New Water Supply		6,029,374.71
Total		$9,174,432.34

ACCOUNTS RECEIVABLE. December 31st, 1901.

Advance Water Rent Account.....	$43,998.94	
Fractional Water Rent Account.....	1,176.40	
Measured Water Account.....	37,797.75	
Special Water Rent Account.....	739.09	
Building Account	23.5	
Arrears Water Rent Account.....	5,748.16	
Service Collection Account.....	430.00	
Sundry Personal Account.....	41,049.06	
Total		$130,962.91

FUND FOR THE CONSTRUCTION OF A STORAGE RESERVOIR.

CASH ACCOUNT.

	Dr.	Cr.
Balance, January 1st, 1901		$4,254.41
Interests on Investments	$3,800.00	
Rents, Real Estate	260.00	
Sale of Hay	84.00	
Total Receipts for 1901		4,144.00
		$8,398.41
Taxes	$123.60	
Estate Thos. J. O'Brien, Legal Services	50.00	
Edwin P. Ford, Seventy Acres of Land	2,500.00	
Total Disbursements in 1901		2,673.60
Balance to Credit of Account with City Treasurer, December 31st, 1901		$5,724.81

TRIAL BALANCE.

	Dr.	Cr.
Cash	$5,724.81	
Bond Account	65,000.00	
Ivy Hill Proporty	81,828.40	
Belleville Property	13,965.35	
Charlottesburgh Property	50,670.07	
Storage Reservoir Account		$217,188.63
	$217,188.63	$217,188.63

REAL ESTATE AND SECURITIES.

Registered Newark City Water Bonds No. 9	$50,000.00
Registered Newark City Water Bonds No. 88	15,000.00
Ivy Hill Property, South Orange, N. J.	81,828.40
Belleville, N. J., Property	13,965.35
Charlottesburgh, N. J., Property	50,670.07
	$211,463.82

EXPENDED ON ACCOUNT OF

NEW STORAGE RESERVOIR

AND THIRTY-SIX INCH SUPPLY PIPE LINE DURING YEARS 1900 AND 1901.

NEW STORAGE RESERVOIR.

Engineering expenses, &c.	$5,967.25	
Iron Pipe and Castings	6,830.85	
Interest on Loans	10,803.51	
Payments on Contracts	15,974.49	
Labor	5,608.25	
Cost of land	65,800.00	
Condemnation expenses	2,956.56	
		$113,940.91

THIRTY-SIX INCH SUPPLY PIPE LINE.

Labor	$44,353.81	
Iron Pipe and Castings	94,382.00	
Inspecting Pipe	400.33	
Carting Pipe	3,682.95	
Land for Right of Way	3,450.00	
Caulking Machine	490.00	
Miscellaneous Material	11,218.77	
Work at 2nd. River, and S. O. ave. and 8th st.	920.12	
Expenses	1,571.00	
		160,468.98
		$274,409.89
Less sale of Hay, &c., &c.		158.00
		$274,251.89



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1904

ANNUAL REPORT

OF THE

WATER DEPARTMENT

OF THE

Board of Street and Water Commissioners

OF THE

CITY OF NEWARK, N. J.

FOR THE YEAR

1902

ANNUAL REPORT

OF THE

WATER DEPARTMENT

OF THE

Board of Street and Water Commissioners

OF THE

CITY OF NEWARK, NEW JERSEY.

FOR THE YEAR ENDED DECEMBER 31, 1902.

OFFICERS AND MEMBERS.

PRESIDENT, - WINTON C. GARRISON, 79 WASHINGTON AVENUE

COUNSEL, - E. LIVINGSTON PRICE, 800 BROAD STREET

CLERK OF THE BOARD, WILLIAM E. GREATHEAD, 24 MILFORD AVENUE

ENGINEER & SUP'T. DEPT. WATER, MORRIS R. SHERRERD, 938 BROAD STREET

CASHIER DEPT. WATER, GEORGE M. VAN NAME, 177 ORCHARD STREET

COMMISSIONERS.	RESIDENCE.
GEORGE M. BALLARD,	No. 29 Milford Avenue.
C. V. BAUMANN,	" 385 S. Tenth Street.
WINTON C. GARRISON,	" 79 Washington Ave.
JOSEPH S. VINSON,	" 277 Walnut Street.
AUGUSTUS F. EGGERS,	" 21 S. Tenth Street.

NEWARK, N. J.:
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251 MARKET ST.

1903.

REPORT OF

THE ENGINEER AND SUPERINTENDENT OF THE DEPARTMENT OF WATER.

To the Board of Street and Water Commissioners of the City of Newark, N. J.

GENTLEMEN:

I herewith submit the following report of the condition and operation of the works of the Department of Water for the year ended December 31st, 1902.

CONSUMPTION—STATEMENT FOR YEAR ENDED DECEMBER 31st, 1902.

Months 1902	Total consumption per month, Mill Gallons.	Average Daily consumption in Mill. Gallons.	Number of Taps at beginning of Each Month.	Av. Daily consumption per Tap in Mill. Gallons.	Mean Temperature.	Rainfall in inches.
January	808.8	26.1	35284	740	27.2	2.77
February	808.0	28.8	35338	815	27.1	5.35
March	781.0	25.2	35849	713	42.1	4.95
April	751.8	25.1	35425	709	49.7	3.57
May	800.9	25.8	35529	724	59.6	1.58
June	796.9	26.6	35616	747	67.6	7.15
July	820.6	26.4	35707	740	72.6	3.02
August	816.0	26.3	35813	734	70.4	2.00
September	768.1	25.6	35928	713	63.6	5.05
October	800.8	25.8	36012	716	55.2	7.06
November	763.7	25.4	36117	703	48.4	1.12
December	822.5	26.6	36199	732	30.3	7.37
Total	9539.1					50.99

Average daily consumption, 26.1.
Average " " per tap, 719.
Approximate number of taps at the end of the year, 36,278.

The accompanying folder gives the consumption since 1892, when the gravity plant was introduced. Detailed information in regard to street mains, services, meters, etc., may be found in the appended tables.

REVENUE FROM WATER.

A comparison of the amounts received and due for water alone for the years 1901 and 1902, shows the following:

1901.

Received from metered water	$378,013.12	
Received from other water rents	320,124.98	
Total received from water rents (except special contracts)		$698,138.10
Due from metered water		37,797.79
Due from other water rents		50,947.01
Actual and prospective normal revenue		$786,882.90

1902.

Received from metered water	$381,932.88	
Received from other water rents	313,228.17	
Total received from water rents (except special)	695,161.05	
Due from metered water	40,356.09	
Due from other water rents	45,959.39	
Actual and prospective normal revenue		$781,476.53
Decrease normal revenue		$5,406.37

SPECIAL CONTRACTS.

1901.

Amount received	$29,093.27	
Amount due	739.09	
Total revenue from Special Contracts		$29,832.36

1902.

Amount received	$43,923.57	
Amount due	1,565.52	
Total		$45,489.09
Increase from Special Contracts		$15,656.73

The difference between the increase of revenue from special contracts and the loss on normal water rents shows a net gain of $10,250.36.

A comparison of the cash balance for 1901 and 1902 shows:

Cash balance December 31st, 1902	$106,021.96
Cash balance December 31st, 1901	94,098.81
Increase for 1902	$11,923.15

As the net increased revenue and the actual increase in cash on hand are about the same, and as the amounts due from water rents at the end of 1901 and 1902 are also about the same, it follows that the actual expenses for the two years must have been very nearly the same. This may be shown as follows:

Amount outstanding for water 1901	$89,483.89
Amount outstanding for water 1902	87,881.00
Difference represents closer collections 1902	$1,602.89

This difference taken from the increase in cash would leave almost the exact sum represented by the net increase in revenue.

DISTRIBUTION.

The extensions to street mains in the city during the year 1902, were as follows:

428	lineal feet of	12"	Pipe.
1,413	" "	10"	"
26,541	" "	6"	"
494	" "	4"	"

Total....28,876 lineal feet, or $5\frac{8}{11}\frac{1}{8}\frac{6}{0}$ miles.

Belleville Township 7,040 lineal feet, or $1\frac{1}{5}\frac{3}{2}\frac{8}{8}\frac{0}{0}$ miles.

The total length of pipe connected with the works is as follows:

In the City	$263\frac{430}{5280}$ miles.
Belleville Township	$12\frac{2782}{5280}$ miles.
Vailsburgh (Columbia Heights)	$2\frac{1100}{5280}$ miles.
South Orange Ave. (Shooting Park)	$\frac{1700}{5280}$ miles.
	$278\frac{8312}{5280}$ miles.

The amount of work done in relaying was as follows:

326	lineal	feet	of 12"	diameter.
1,980	"	"	8"	"
3,542	"	"	6"	"
Total..... 5,848	lineal	feet,	or $1\frac{568}{5280}$	miles.

The amount of work done in the way of lowering pipe:

250	lineal	feet	of 12"	diameter.
250	"	"	10"	"
4,013	"	"	6"	"
1,495	"	"	4"	"
Total..... 6,008	lineal	feet or	$1\frac{728}{5280}$	miles.

During the year 146 new hydrants were set, of these 73 were substituted in place of old hydrants, 73 were added to the total number in service, making a total of 2,275 set in the city at the end of the year.

NEW STORAGE RESERVOIR.

Work on the reservoir proper and the tunnel was carried on during the year 1902. The manufacture of the 60-inch steel pipe was also begun, a contract for the work having been awarded to the T. A. Gillespie Company for $588,343.50.

Owing to the disintegrated nature of the rock found in the core trench of the west dam at the reservoir, it was necessary to continue the excavation at some points to a depth of thirty feet below the surface of the rock, to get

below the seams or to get down to solid rock. Test holes and drillings had been made and these had all indicated ledge rock, but failed to reveal the extent or the disintegrated nature of the rock. Work on the reservoir was delayed and the cost will be proportionately increased, due to the existing conditions.

Including the part of the cost of the 36-inch high service main which was charged to the New Storage Reservoir account, the total amount expended to December 31st, 1902, was $674,832.54. A detailed statement of this expenditure will be found among the financial reports.

NEW WATER SUPPLY.

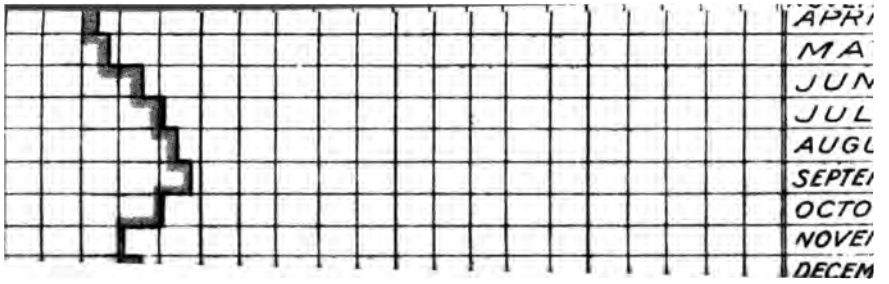
The policy of maintaining a careful inspection of the sanitary condition of the water shed has been continued.

The city owns many tracts of timber and considerable pieces of scrub growth around the several reservoirs, and as suggested in last year's report, all of this land is being treated under the direction of the State Forrester. The Water Department has been able to cut off considerable cord wood, and to supply all the poles necessary to renew the telephone line from the Macopin Intake to the Belleville Reservoir. This cutting was done in such a manner that the remaining timber is given a better chance to develop. It is recommended that many of the open tracts be planted with trees and that all the property owned by the city, with the possible exception of one or two farms, which are situated some distance from the reservoirs, be treated in such a way as to restore the land to its natural state.

Respectfully submitted,

M. R. SHERRERD,

Engineer and Superintendent Department Water


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DETAIL STATEMENTS

to accompany

Report of the Engineer and Supt.

Department of Water.

STATEMENT OF PIPE LAID IN 1902.

Month 1902.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER IN INCHES 12 in.	10 in.	6 in.	4 in.	STOPS.	HYDRANTS.
Jan	Seymour ave., from Clinton ave. north			376		1	1
"	Peshine ave., from Clinton ave. north			496		1	1
"	Shaw ave., from Fabian place west			231			1
"	South 11th st., from dead end north of Clinton ave. north			180		...	
"	North 6th st., from dead end north of 2d ave. north			165			
"	South 14th st., from dead end north of Clinton ave. north			375			1
"	Woodside ave., from dead end north of Elwood ave. north			48			
March...	Dickerson st., from 2d to 3d st			180			
"	Vorhees st., from Fabian place west			294			1
"	Parker st., from 2d ave. south to dead end bet. 2d & Bloomfield aves.			330		1	
"	Third ave., across Clifton ave			48		...	...
"	New York ave., from dead end west of Lang st. west			312			
April....	Saybrook place, from dead end east of Park place east				60		
"	Pennsylvania ave., from south side Poinier st. south			90		...	
"	Van Buren st., from dead end north of E. Kinney st. to Nichols st.			96		...	
"	Crane st., from Wood to Cutler st				173		
"	Dickerson st., from 3d to 5th st			442		2	
"	Lang st., from New York ave. to Elm road			572			
"	Warwick st., from Lang st. west			27		1	
"	First ave., from 4th to 5th st			51	261	1	..
"	Fourth st., from 1st ave. to Bloomfield ave			270		1	
May ...	Morris ave., from dead end middle of block between 13th and S. Orange aves. to south side S. Orange ave			430		2	2
	Carried forward			5013	494	10	7

STATEMENT OF PIPE LAID IN 1902.—CONTINUED.

Month 1902.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER IN INCHES. 12 in.	10 in.	6 in.	4 in.	STOPS.	HYDRANTS.
	Brought forward			5013	494	10	7
May	Tillinghast st., from Reeves place to Clinton place			688		1	1
June	South st., from Pacific to Dawson st			605		2	
"	Fifteenth ave., from S. 18th to S. 19th sts.; S. 19th st., from 15th ave. about 200 feet north			508		1	
"	Seventeenth ave., from Bergen st. pipe west			24			
"	Third st., from Bloomfield ave. to 2d ave			294		1	
"	Mott st., from Passaic ave. to Ferry st		1197			3	3
"	Madison ave., across Bergen st			60			...
July.....	South Fourteenth st., from dead end south of Madison ave. to dead end north of Madison ave			412		1	
"	Hamburg place, from dead end south side Central R. R. to 200 feet north of Chestnut st			1,419			1
"	South st., from Pacific to Jefferson st			655		2	1
"	Parkhurst st., from dead end 250 feet east of Goble st. east			60			
"	Frelinghuysen ave., from dead end south side of Elias Ward's factory (75 feet south of south side Victoria st.) south			2,328		3	4
"	Ridgewood ave., from Madison to Clinton ave			397		2	...
"	South Fourteenth st., from 9th ave. to middle of block between 9th and Central aves			421		1	...
"	Arlington ave., from Summer to Woodside ave			219			1
Aug.....	Oraton st , from Elwood ave. north			409		1	1
	Carried forward		1197	13,502	494	28	19

STATEMENT OF PIPE LAID IN 1902.—CONTINUED.

Month 1902.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER IN INCHES. 12 in.	10 in	6 in.	4 in.	STOPS.	HYDRANTS.
	Brought forward		1,197	13,502	494	28	19
Aug.	Cabinet st., east of S. 6th st			48			
"	Runyon st., from dead end west of Frelinghuysen ave. west			72			
"	Ridge st., from Fredonia ave. to north side of Grafton avenue			837		3	1
"	Madison ave., from S. 10th st. to S. 11th st.; S. 11th st., from Madison ave. south to dead end bet. Clinton and Madison aves.			559		1	1
"	Baldwin ave., from Clinton ave. north			172		1	1
Sept.	Backus st., from Elm road east			150		1	1
"	Morris ave., from New to Dickerson st			674		2	
"	North Eighth st., from Chester ave. north			463		1	1
Oct.	South Nineteenth st., from 16th ave. north			144			
"	Hunterdon st., from Watson ave. north			616		1	1
"	Seymour ave., from dead end north of Clinton ave. to Madison ave.			303		1	1
"	Clifton ave., from dead end south of Verona ave. south		216				
"	Shanley ave., from Clinton ave. north	223				1	1
"	Bergen st., from Hawthorne ave. to 65 ft. south of Hawthorne pl.			1 362		3	2
"	Watson ave., from Elizabeth ave. to Bergen st			2,219		5	4
"	Sherman st, from Hunterdon st. east			183			1
"	Elizabeth ave., from Peddie st. to Watson ave			1,477		3	1
"	Market st., across Pennsylvania R. R. track	40					...
Nov.	Gould ave., from dead end at city line to S. 15th st.; S. 15th st., from Gould ave. south			380		2	1
	Carried forward	263	1,413	23,161	494	53	36

STATEMENT OF PIPE LAID IN 1902.—CONTINUED.

Month 1902.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER IN INCHES. 12 in.	10 in	6 in.	4 in.	STOPS.	HYDRANTS
	Brought forward	263	1,413	23,161	494	53	36
Nov.	South Nineteenth st., from 18th ave. south			217		1	
"	Hunterdon st., from Watson ave. to Custer ave			740		2	1
"	South Thirteenth st., from dead end north of 18th ave. north			60		...	
"	Custer ave., from Hunterdon st. east			195			1
"	Peshine ave., south of Watson ave			412		1	1
"	Hillside ave., from Watson ave. south			267			1
"	Johnson ave., from Watson ave. south			339			1
"	Ridgewood ave., from Watson ave. south			315			1
"	Seventeenth ave., from Bergen st. west			132			
"	Badger ave., from Watson ave. south			339			1
Dec.	Runyon st, from Hedden terrace west			136		1	
"	Connection of 12 inch main in Orange st. with 12 inch main in Main st. (E. Orange)	150					
"	Millington ave., from Nairn place west			120			
"	Connection of 36 inch cast iron pipe with 12 inch cast iron pipe in 5th and Orange sts	15					
"	Fifth st., from dead end bet. Abbington and Berkeley aves. south			108			
	Total	428	1,413	26,541	494	58	43

During the past year 28,876 lineal feet of pipe have been laid in the city, of which

428 lineal feet of 12 inch diameter
1,413 " " 10 " "
26,541 " " 6 " "
494 " " 4 " "

} $5\frac{2476}{5280}$ miles.

STATEMENT OF PIPE RELAID IN 1902.

Month.	LOCATION OF PIPE	LENGTH IN LINEAL FEET. DIAMETER IN INCHES. 12 in.	8 in.	6 in.	4 in.	STOPS.	HYDRANTS.
Jan.,	Mulberry st., from Green to Mechanic st		1,022				
"	Lafayette st. (formerly Fair st.), from Mulberry st. west			52		1	1
Feb	N. J. R. R. ave., west side between Green and Lafayette sts		222				
April	Mulberry st., from Market to Mechanic st	249					
"	Commercial st., from East Canal 215 ft. east, and from there 325 ft. south			540		4	1
"	Sixth av., at the intersection of Mt. Prospect ave.			43			
"	Cabinet st., across Morris ave			60			
May	Park place, from Rector st. to Centre st			561		2	1
"	Washington st., from E. Kinney to 50 ft. north of Spruce st., including cross-connections at Governor and Crawford sts			1,134		6	
"	W. Kinney st., from Broome st. to west of Charlton st			622		1	
"	Connection of intersection of Market and Mulberry sts	77				1	
June	M. & E. R. R. ave., south side from Broad st. west,			150			
Oct	Lawrence st., from Market to Commerce sts., Commerce st., from east side Lawrence to Mulberry st		736			3	
"	Clinton st., across Lawrence st			52		1	1
Dec	Elizabeth ave., between Runyon and Concord sts			328			1
	Total	326	1,980	3,542		19	5

During the year 5,848 lineal feet of pipe have been relaid in the city, of which

326 lineal feet of 12 inch diameter
1,980 " " 8 " "
3,542 " " " "

} $1\frac{668}{5280}$ miles.

STATEMENT OF PIPE LOWERED IN 1902.

Month. 1902.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. DIAMETER IN INCHES. 12 in.	10 in.	6 in.	4 in.	STOPS.	HYDRANTS
March...	Grove st., from Market to Bank st.				373	...	
April. ..	Sixth ave., from Cutler st. to Mt. Prospect ave.			450	...		
" ...	Morris ave., from Warren to Cabinet st.			456			
May	Morris ave., from middle of block between S. Orange and 14th aves. to 14th ave.			240			
"	Morris ave., from about 240 ft. south of 14th ave. to 15th ave			350			
"	Morris ave., from 15th ave. south			270			
"	Morris ave., from W. Kinney st. south			280			
"	Verona ave., from Lake st. west		250				...
"	Baldwin st., from High st. west				300		
"	Grove st., south of 13th ave.				150		
"	Vesey st., from McWhorter st. west			92		...	...
June	Bank st., from High to Silk st.			250	370		
"	Hawkins st., from Brinsmaid place south			300			...
"	Bank st., from 140 ft. east of Wickliffe st. to 60 ft. west of Wickliffe st.	250					
"	Aqueduct st., from 100 ft. north of 5th ave.			200			
"	Aqueduct st., from north side of 4th ave. north			475			
"	Bergen st., from Avon to Madison ave.			650			1
July	Lillie st., from Waverly ave. north				300		
	Total	250	250	4,013	1,495		1

During the year 6,008 lineal feet of pipe have been lowered in the city, of which

250 lineal feet of 12 inch diameter
250 " " 10 " "
4,013 " " 6 " "
1,495 " " 4 " "

} = $1\frac{728}{5280}$ miles.

PIPES LAID, RELAID AND LOWERED.—YEAR ENDED DECEMBER 31, 1902.

	LENGTH IN LINEAL FEET.					Total.	Valves.	Hydrants.
	12 in.	10 in.	8 in.	6 in.	4 in.			
Pipe Laid. (Extensions).....	428	1,413		26,541	494	28,876	58	43
Pipe Relaid. Substitution of large for small pipe, and replacing old horizontal cast pipe	326		1,980	3,542		5,848	19	5
Pipe Lowered, on account of freezing	250	250		4,013	1,495	6,008		1
Miscellaneous. Valves on hydrants, substitution for old broken valves and replaced hydrants.....							155	73
Total.....	1,004	1,663	1,980	34,096	1,989	40,732	232	122

Total Pipe Laid, Relaid and Lowered during the year..... 40,732 Lin. ft.=$7\frac{1112}{5280}$miles.

Total mileage of pipe connected with the works at the year ended 1902...$278\frac{4224}{5280}$ miles.

SERVICES FROM JANUARY 1, 1902, TO JANUARY 1, 1903.

¾-INCH SERVICES. MONTHS.	No. of New Services.	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
January	52	0	0	0	52	904	$ 728.00
February	11	9	0	0	11	569	244.00
March	68	11	1	1	69	2,044½	1,065.00
April	98	4	0	1	99	1,566½	1,415.00
May	83	10	0	1	84	1,697½	1,269.00
June	84	16	0	2	86	2,275	1,342.00
July	100	6	0	1	101	1,759	1,463.00
August	109	4	0	0	109	2,184	1,566.00
September	82	1	0	1	83	1,745	1,161.00
October	101	7	0	2	103	1,840½	1,490.00
November	79	4	1	2	81	1,603½	1,156.00
December	75	3	0	1	76	886	1,083.00
Totals	942	75	2	12	954	19,074½	$13,982.00

SERVICES FROM JANUARY 1, 1902, TO JANUARY 1, 1903.

1-INCH SERVICES. MONTH	No. of New Services.	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
January	2	0	0	0	2	53	$40.00
February	0	2	0	0	0	22	40.00
March	8	1	1	0	8	289½	187.00
April	6	4	0	0	6	130½	200.00
May	4	4	0	0	4	163½	160.00
June	7	1	0	0	7	110	160.00
July	6	2	0	0	6	135	160.00
August	6	0	0	0	6	129½	120.00
September	2	2	0	0	2	77	80.00
October	4	0	0	0	4	77½	80.00
November	3	2	0	0	3	174½	100.00
December	4	2	0	0	4	166	120.00
Totals	52	20	1	0	52	1,528	$1,447.00

RECAPITULATION, 1902.

SIZE.	No. of New Services.	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
⅝-Inch	942	75	2	12	954	19,074½	$13,982.00
1 "	52	20	1	0	53	1,528	1,447.00
Totals	994	95	3	12	1,007	20,602½	$15,429.00

METERS SET BY CONSUMERS, 1902.

Months. 1902.	THOMPSON–BEE. Inches.		Diam.				NASH. Inches.		Diam.		TRIDENT. Inches.			Diam.			HERSEY In.	Di.	CROWN. Inches.	Diam.		TOTALS.
	5/8"	3/4"	1"	1 1/2"	2"	3"	5/8"	3/4"	1"	2"	5/8"	1"	2"	3"	4"	6"	5/8"		5/8"	2"	3"	
January	65		6	2							3	2		1	1				1			81
February	41		1			1	1		2	1									2			49
March	26		6	1	1				2	1	47											84
April	75		4	1	1				1		41		1			1				1		126
May	201		2	1	2						201	5		1								413
June	85	1	3				33	1			33	5	1									162
July	12		8	1			65		1		31	2										120
August	48		7								54			1	1							111
September	54		4				46		1		1										1	107
October	72	1	1	1	2		49		1		47	9					1		1			185
November	168		2		1						57											228
December	70		2		3	1	2				28											106
Totals	917	2	46	7	10	2	196	1	8	2	543	23	2	3	2	1	1		4	1	1	1772

Number of Meters in use January 1st, 1902	11,502
Total number of Meters set during 1902	1,772
Total number of Meters in use January 1st, 1903	13,274

SPECIAL SERVICE CONNECTIONS FROM JANUARY 1, 1902 TO JANUARY 1, 1903.

MONTH.	1 ½ in.	2 inch	3 inch.	4 inch.	6 inch.	Total.
January	1					1
February		1	1			2
March		4				4
April		4			1	5
May		3				3
June				1	1	2
July		4				4
August				1		1
September			1			1
October		3	3	1		7
November		3				3
December		3			2	5
Totals	1	25	5	3	4	38

HYDRANT STATEMENT

For the Year Ended December 31st, 1902.

LOW SERVICE.

Month.	No.	LOCATION.	Diameter.
Jan.	1	N. W. corner Lafayette & Mulberry sts...	6 inch.
March	2	Johnson st., n. s., opposite Dawson st.....	6 "
April	3	Commercial st., s. s., 250 ft. east of Pennsylvania R. R.....	6 "
	4	N. E. corner Lang st. and Elm road.....	4 "
May	5	Park pl., w. s., bet. Rector and Centre sts..	6 "
June	6	N. W. corner Mott and Bowery sts.....	6 "
July	7	Hamburg pl., e. s., about 200 ft. north of Chestnut st.	6 "
	8	South st., n. s., bet. Pacific & Jefferson sts..	6 "
	9	N. E. cor. Frelinghuysen ave. & Princeton st	6 "
	10	N. E. cor. Frelinghuysen ave. & Elizabeth ave.	6 "
	11	S. W. cor. Frelinghuysen ave. & Lower road to Elizabeth.....	6 "
	12	Frelinghuysen ave., 200 ft. south of lower road to Elizabeth.....	6 "
	13	E. Kinney st., n. s., middle of block, between Pacific and Jefferson sts.....	4 "
	14	E. Kinney st., n. s., middle of block, between Pacific and McWhorter sts.....	4 "
	15	N. E. cor. Arlington & Woodside aves....	6 "
Aug.	16	Oraton st., w. s., 400 ft. north of Grafton ave	6 "
	17	Frederick st., w. s., middle of block, between Market st. and Pacific ave.....	4 "
Sept.	18	N. E. corner Backus and Jabez sts.....	6 "

HIGH SERVICE.

Month.	No.	LOCATION.	Diameter.
Jan.	19	Seymour ave., w. s., 375 ft, north of Clinton ave.	6 inch.
	20	S. 14th st., w. s., about 100 ft. south of Madison ave.	6 "
	21	Voorhees st., n. s., 250 ft. west of Fabian pl.	4 "
April	22	Cutler st., w. s., middle of block, between 5th and 6th aves.....	4 "

HYDRANT STATEMENT—CONTINUED.

Month.	No.	LOCATION.	Diameter.
	23	Highland ave., between Verona & Montclair aves.	6 "
	24	DeGraw ave., between Montclair & Grafton aves.	6 "
	25	N. W. corner Morris and S. Orange aves..	6 "
	26	Morris ave., w. s., middle of block, between S. Orange and 13th aves	4 "
May	27	Tillinghast st., n. s., middle of block, between Clinton pl. and Reeves pl	6 "
June	28	N. E. corner 15th ave. and S. 19th st	4 "
	29	Highland ave., w. s., middle of block, between 4th and Bloomfield aves	4 "
	30	Bergen st., w. s., middle of block, between Madison and Clinton aves	6 "
	31	Bergen st., w. s., middle of block, between Clinton ave. and Bigelow st	6 "
	32	Bergen st., w. s., middle of block, between Bigelow and Runyon sts	6 "
Aug.	33	N. W. corner Delavan and Clinton aves....	4 "
	34	Clifton ave. w. s., middle of block, between Elwood and Delavan aves	4 "
	35	Ridge st., w. s., middle of block, between Grafton ave. and Heller Parkway	6 "
	36	N. E. corner Madison ave. and S. 11th st..	6 "

Hydrants Replaced During the Year 1902.

LOW SERVICE.

Month.	No.	LOCATION.	Diameter.
Jan.	1	N. E. corner Tichenor st. & N. J. R. R. ave.	4 inch.
	2	N. W. corner N. J. R. R. ave. & Wright st.	4 "
	3	N. E. corner Vesey st. & N. J. R. R. ave...	4 "
	4	N. W. corner Clifford and Van Buren sts..	4 "
	5	S. W. corner Mechanic and Mulberry sts..	6 "
Feb.	6	Broad st., w. s., middle of block, between Oriental st. and Third ave.....	4 "
	7	S. W. corner Christie and Bowery sts....	4 "
	8	S. E. corner Passaic ave. and Jackson st..	4 "
	9	S. W. corner Orchard and Walnut sts....	4 "
March	10	S. W. corner Carteret st. and Lincoln ave.	4 "
	11	S. E. corner Carteret st. and Summer ave..	4 "
	12	N. W. corner Grove and Market sts.....	6 "
	13	Vesey st., n. s., between N. J. R. R. ave. and Hermon st.....	4 "
April	14	Oliver st., s. s., middle of block, between N. J. R. R. ave. and McWhorter st....	4 "
	15	R. R. pl., w. s., and e. s. Penn. R. R., opposite South Canal st.....	6 "
May	16	Hawkins st., w. s., middle of block, between Ferry and Horatio sts.....	4 "
June	17	Taylor st., n. s., middle of block, between Belleville and Summer aves.....	4 "
	18	N. W. corner South and Dawson sts.....	4 "
	19	South st., n. s., 100 ft. east of Mulberry st.	4 "
	20	N. E. corner New and High sts.....	4 "
	21	N. W. corner Central ave. and Plane st....	4 "
	22	S. E. corner Congress and Ferry sts.....	4 "
	23	N. W. corner Mott and Market sts.....	6 "
	24	Mott st., w. s., middle of block, between Passaic ave. and Bowery st.....	6 "
July	25	Campfield pl. (rear of Green st.).....	4 "
	26	N. E. corner N. Y. ave. and Napoleon st..	4 "
	27	N. W. corner E. Kinney and Jefferson sts.	4 "
	28	E. Kinney st., n. s., between McWhorter and N. J. R. R. ave.....	4 "

HYDRANT STATEMENT—CONTINUED.

Month.	No.	LOCATION.	Diameter.
Aug.	29	S. W. corner Adams and Downing sts.....	4 inch.
	30	Ogden st., e. s., opposite Cross st.....	4 "
Sept.	31	Junction of Belleville ave. and Broad st....	4 "
	32	N. E. corner Clinton ave. & Washington st	4 "
	33	N. W. corner New st. and Morris ave.....	4 "
	34	Broad st., w. s., between Kinney & Marshall sts.	4 "
	35	Commerce st., n. s., opposite Lawrence....	6 "
	36	N. W. corner Clinton and Lawrence sts...	6 "
Oct.	37	S. W. corner Chambers and Market sts....	4 "
	38	S. W. corner Ferry and Niagara sts.....	4 "

HIGH SERVICE.

Month.	No.	LOCATION.	Diameter.
Jan.	39	N. E. corner James and High st.....	4 inch.
	40	N. W. corner Lillie st. and Waverly ave...	4 "
	41	S. W. corner Roseville ave. and Newbold st	4 "
	42	S. E. corner 17th ave. and Lillie st.....	4 "
	43	N. W. corner 15th ave. and S. 8th st.....	4 "
April	44	Clinton ave., n. s., opposite Milford ave....	4 "
May	45	Morris ave., e. s., between S. Orange and 14th aves.	4 "
	46	S. W. corner Spruce and Washington sts..	4 "
	47	S. W. corner Bruce st. and 15th ave.....	4 "
June	48	Bruce st., w. s., middle of block, between 12th and 13th aves.....	4 "
	49	S. E. corner First and Orange sts.....	4 "
	50	N. W. corner First st. and Sussex ave.....	4 "
	51	First st., middle of block, between Sussex ave. and Orange st.....	4 "
	52	N. W. corner First and Warren sts.....	4 "
	53	First st., w. s., middle of block, between Sussex ave. and Dickerson st.....	4 "
	54	Bergen st., w. s., middle of block, between 12th and 13th aves.....	4 "
	55	N. W. corner Highland and 4th aves.....	4 "
	56	N. W. corner Bergen st. and S. Orange ave	4 "
	57	N. W. corner Bergen st. & Thirteenth ave	4 "
	58	S. W. corner Mt. Prospect ave. and Heller Parkway	4 "
	59	N. W. corner Academy and High sts.....	4 "
Aug.	60	N. W. corner Fairview and Waverly aves..	4 "
	61	S. W. corner Newton st and 12th ave.....	4 "

HYDRANT STATEMENT—CONTINUED.

Month.	No.	LOCATION.	Diameter
	62	S. W. corner 12th ave. and Bruce st.....	4 inch.
	63	N. W. corner 12th ave. and Bergen st.....	4 "
	64	N. W. corner 12th and Fairmount aves....	4 "
	65	N. W. corner 12th ave. and 8th st.....	4 "
Sept.	66	Newton st., w. s., middle of block, between 12th and 13th aves.....	4 "
	67	S. 15th st., w. s., between 14th and 15th aves	4 "
	68	S. 8th st., w. s., 300 ft. north of 15th ave....	4 "
	69	S. W. corner Howard and Bank sts.....	4 "
Oct.	70	Camden st., w. s., middle of block, between Warren and Cabinet sts.....	4 "
	71	N. E. corner Magnolia st. and 18th ave....	4 "
Nov.	72	S. W. corner Littleton ave. and Warren st.	4 "
Dec.	73	N. W. corner Milford ave. and Runyon st..	4 "

Hydrants Removed During the Year 1902.

Month.	LOCATION.	Diameter.
Jan.	Peshine ave., w. s., from 200 ft. south of Madison ave. to middle of block between Madison and Clinton aves	4 inch.
Aug.	S. E. corner Springfield ave. and Magnolia st. to n. w. corner Littleton and Springfield aves.	4 "

RECAPITULATION.

New hydrants set on Low Service	18
" " set on High Service	55
" " replacing old on Low Service	38
" " replacing old on High Service	35
Total new hydrants set, 1902	146

The total number of hydrants connected with the works at the end of the year was:

In the City on Low Service	1,054	
In the City on High Service	1,221	
Total in the City		2,275
At the Belleville Pump House and Reservoir		4
Township of Belleville		92
Township of South Orange		3
Columbia Heights		14
Total		2,388

FINANCIAL STATEMENTS.

ACCOUNTING DIVISION.

Department of Water.

YEAR ENDED DECEMBER 31, 1902.

BOARD OF STREET AND WATER COMMISSIONERS OF THE CITY OF NEWARK, DEPARTMENT OF WATER.

To the Honorable, The Mayor and Common Council of the City of Newark, N. J.

GENTLEMEN—In accordance with Section 20 of the law creating the Board of Street and Water Commissioners of the City of Newark, which requires me to make a report of the receipts and expenditures at the close of each fiscal year, I herewith submit the following as my report of the Department of Water for the year ended December 31st, 1902.

Cash Balance, December 31st, 1901	$ 94,098.81
Receipts from all sources	840,712.40
	$934,811.21
Less Disbursements on all accounts	828,789.25
Balance, December 31st, 1902	$106,021.96

WM. E. GREATHEAD,
Clerk of the Board.

NEWARK, N. J., March 1st, 1903.

W. E. Greathead, Clerk of the Board of Street and Water Commissioners.

DEAR SIR—I herewith submit Financial Statements and trial balance of the Department of Water for the year ended December 31st, 1902.

Yours respectfully,

GEO. M. VAN NAME,
Cashier.

RECEIPTS FOR 1902.

Balance, January 1st, 1902		94,098.81
Advance Water Rent Collection	$299,775.21	
Hose Collection	3,252.50	
Fractional Water Rent Collection	1,503.91	
Sprinklers' Collection	2,542.00	
Building Collection	3,660.05	
Special Water Rent Collection	43,923.57	
Arrears Water Rent Collection	2,494.50	
Measured Water Collection	381,932.88	
Service Collection Account	15,789.17	
Sales on Service Account	118.60	
Penalties and Fines	3,076.08	
Rents, Real Estate	1,559.54	
Sundry Personal Account	34,787.89	
Warrant Cancelled	2.75	
		794,418.65
Transferred from Fund for the Construction of a Storage Reservoir		16,293.75
Appropriation for Street Main Extension		30,000.00
Total		$934,811.21

DEPARTMENT OF WATER.

DISBURSEMENTS FOR 1902.

Monthly Pay Roll	$ 45,947.93
Weekly Pay Roll	102,743.52
Water Bond Interest	400,755.00
Sinking Fund Payment	172,800.00
Water Meters	17,501.00
Fire Hydrants	3,833.00
Castings	5,262.04
Pig Lead and Lead Pipe	5,985.34
Stop Cocks	2,520.02
Lumber	1,344.88
Valve Boxes	2,747.15
Yarn and Jute	140.78
Clay Pipe	35.18
Valves	415.20
Paint, etc.	539.29
Gasoline and Kerosene	568.15
Rubber Goods	355.43
Cast Iron Pipe	27,042.13
Lead Lined Pipe	407.85
Solder	252.50
Inspecting Pipe	467.12
Drinking Fountains	297.00
Wooden Plugs	77.00
Royalty for Use of Tapping Machine	600.00
General Supplies	2,596.54
Horse and Wagon Hire	425.30
Horse Shoeing	577.60
Board of Horses	1,005.33
New Horses	885.00
New Wagons	275.00
New Sleigh	35.00
Hauling Pipe	160.50
New Harness	35.00
Stable Supplies	20.42
Veterinary	9.00
Wagon Repairs	1,442.36
Harness Repairs	433.38
Drugs	21.75
General Repairs	1,030.49
Tool Repairs	976.47
Hay, Oats, Feed, etc.	1,546.63
Meter Repair Parts	846.64
Hydrant Repair Parts	74.36
Electric Repairs	81.30
Mason Work and Materials	1,653.23
Coal and Wood	471.98
Ice	105.65
Advertising	219.00
Expert Accountant	1,900.00
Carried forward	$809,465.44

DISBURREMENTS—CONTINUED.

Brought forward	$809,465.44
Printing and Stationery	4,222.21
Electricity	263.96
Disinfectant	45.00
Gas	207.90
Engineering Supplies	194.76
Tools	183.80
Telephone Repairs	129.45
Board and Meals	108.45
Filing Cabinets	357.00
Printing Annual Report	150.00
Repairs to Maps	12.25
Refunded	1,448.28
Insurance	385.82
Petty Expenses, Accounting Division	1,244.65
Petty Expenses, Engineer and Superintendent's Division	2,109.58
Machine Work	49.00
Coke	20.00
Physician, Vaccination	46.25
Office Furniture	38.69
Telephone Service	1.435.01
Repaving Street Cuts	1,934.09
Hose	71.25
Plants and Flowers	89.00
Cutting Timber	300.00
Tax and Assessments	1,227.09
Freight	218.25
Addressograph and Supplies	1,482.37
Automatic Cashier	125.00
Electric Fan	16.50
Painting Houses	441.40
Rent	208.30
Testing for Electrolysis	77.50
Services in Condemnation of Land	75.00
Claims for Damages	75.00
Special Services at Clifton Ave. Power House	20.00
Searching Records	61.00
Lawyers' Services	200.00
Appraising Property	50.00
Total	$828,789.25

EXPENDED ON ACCOUNT OF

NEW STORAGE RESERVOIR

AND THIRTY-SIX INCH SUPPLY PIPE LINE, TO DECEMBER 31st, 1902.

NEW STORAGE RESERVOIR.

Engineering Expenses, etc.	$ 13,801.93	
Iron Pipe and Castings	70,054.19	
Interest on Loan	28,121.80	
Payment on Contracts	271,846.20	
Labor	20,254.20	
Amount Paid for Land	90,289.39	
Expense of Condemnation	3,870.95	
		$498,238.66

THIRTY-SIX INCH SUPPLY PIPE LINE.

Labor	$ 44.353.81	
Cast Iron Pipe and Castings	95,978.19	
Inspecting Pipe	1,000.91	
Carting Pipe	3,682.95	
Land for Right of Way	3,450.00	
Caulking Machine	490.00	
Miscellaneous Materials, etc.	25.304.90	
Work at Second River, and South Orange Avenue and Eighth Street	920.12	
Expenses	1,571.00	
		$176,751.88
Total		674,990.54
Less Sale of Hay, etc., in 1901		158.00
		$674,832.54

TRIAL BALANCE.

DECEMBER 31, 1902.

Cash	$106,021.96	
Construction	2,797,544.64	
Coupon Trust Fund	35.00	
Coupon Bond Account		2,710,000.00
Registered Bond Account		7,137,000.00
Coupons Payable		35.00
Plumbers' Drafts		178.50
Petty Cash	306.07	
Stable Stock and Fixtures	4,152.96	
Office Furniture, Fixtures and Fittings	9,470.48	
Water Meter Account	3,767.00	
Department Meters	41,049.00	
Hydrant Account	282.00	
Insurance	385.82	
Bond and Mortgage	600.00	
Street Mains, Stock and Material	32,330.19	
Real Estate	114,793.09	
Tool Account	8,418.74	
Repair Water Meters	425.00	
Surplus and Deficiency	552,398.40	
New Water Supply	6,029,374.71	
Service Collection Account	576.50	
Advance Water Rent Collection Account	41,701.42	
Fractional Water Rent Collection Account	726.81	
Building Collection Account	39.38	
Special Water Rent Collection Account	1,565.52	
Measured Water Collection Account	40,356.09	
Arrears Water Rent Collection Account	3,491.78	
Sundry Personal Collection Account	38,711.44	
Cedar Grove Reservoir Stock and Fixtures	1,612.30	
Thirty-six inch Supply Main	13,453.95	
New Storage Reservoir	3,623.25	
Total	9,847,213.50	9,847,213.50

ASSETS AND LIABILITIES.

Cash Balance, December 31st, 1902..	$106,021.96	
Property	9,061,589.20	
Accounts Receivable	127,168.94	
Coupon Trust Fund.....	35.00	
Coupon Bonds		2,710,000.00
Registered Bonds		7,137,000.00
Coupons Payable		35.00
Plumbers' Drafts		178.50
Surplus and Deficiency.....	552,398 40	
Total	9,847,213.50	9,847,213.50

SCHEDULE OF PROPERTY, 1902.

DEPARTMENT OF WATER.

Belleville Pump House	$25,000.00	
" Boiler House Extension	2,000.00	
" Engineer and Firemen's Dwellings	10,000.00	
Belleville New Chimney	5,500.00	
" Keeper's House	1,500.00	
" Pumping Engine No. 1	5,000.00	
" Pumping Engine No. 2	5,000.00	
" Pumping Engine No. 3	15,000.00	
" Pumping Engine No. 4	20,000.00	
" Receiving Reservoir	133,645.05	
" New Boilers	15,638.31	
River Wall Dock and Basin	25,000.00	
Driven Wells	22,275.01	
Drilled Wells	36,172.98	
Cassion Wells	2,453.80	
Belleville Reservoir Appurtenances	8,508.93	
High Service Engine House	15,000.00	
High Service Engine House Extension	2,500.00	
New Boiler, Clifton Avenue	2,000.00	
High Service Pumping Engine No. 2	5,000.00	
High Service Pumping Engine No. 3	5,000.00	
High Service Reservoir, South Orange Avenue	94,585.27	
New Service Reservoir	212,827.44	
Street Mains, General.. $1,500,285.83		
Street Mains, 1902..... 28,461.64		
	1,528,747.47	
Pumping Main No. 1	83,528.71	
Pumping Main No. 2	42,736.58	
Supply Main No. 1	138,081.05	
Supply Main No. 2	73,683.69	
Supply Main No. 2, Section A	45,124.01	
Distributing Main No. 2	57,409.83	
Extra High Service Main	30,418.46	
Twelfth Ward Feeder	6,454.38	
Ingraham Place Feeder	1,271.14	
Bridge Street Feeder	2,025.65	
Regular High Service Feeder No. 2	19,896.81	
Regular High Service Feeder No. 2, Extension	11,007.46	
Fores Hil Feeder	6,219.29	
Roseville Feeder	21,000.53	
Seventh Avenue Feeder	4,710.67	
South Street Feeder	2,325.04	
Fourteenth Avenue Feeder	4,864.65	
Ferry Street Feeder	6,836.97	
South Ninth Street Feeder	748.51	
Carried forward		$2,756,698.59

SCHEDULE OF PROPERTY—CONTINUED.

Brought forward.....		$2,756,698.59
Fourteenth Street Feeder.....	1,545.86	
Waverly Avenue Feeder.....	863.06	
Hawthorne Avenue Feeder.....	755.41	
Verona Avenue Feeder.....	1,728.52	
Special High Service Feeder.....	1,079.53	
Feeders $6,227.91		
Feeders, 1902..... 957.35		
	7,185.26	
Distributing Main No. 2, Extension..	4,325.72	
Distributing Main No. 1.....	53.98	
High Service Main No. 1.....	51.90	
High Service Main No. 2.....	20,646.37	
Low Service Supply Main No. 3....	1,231.20	
Weir at Water Shed.....	1,379.24	
New Storage Reservoir Account....	3,623.25	
Thirty-Six inch Supply Main.....	13,453.95	
		2,814,621.84
REAL ESTATE.		
No. 1, No. 128 Halsey Street.....	26,964.15	
No. 5, Nominal.....	100.00	
No. 6, Seventh and Summer Aves....	4,000.00	
No. 12, Ground for New City Stables.	12,134.90	
No. 13, Right of Way and Alley, Millbrook Sewer	75.00	
No. 14, Drift Street at Factory Street, Nominal	20.00	
No. 16, Clifton Avenue Pump House	6,000.00	
No. 18, Low Service Reservoir, Nominal	1.00	
No. 52, Hecker Street, Nominal.....	100.00	
No. 53, South Orange Ave. Reservoir, Nominal	1.00	
No. 54, Corner 14th Ave. and Ninth Street	15,000.00	
No. 55, Corner 14th Ave. and Eighth Street	7,500.00	
No. 56, Belleville Pump House and six houses	11,883.64	
No. 57, Opposite Pump House.....	1,693.92	
No. 58, Belleville Reservoir, Nominal	1.00	
No. 59, Part of Belleville Reservoir Property	532.50	
No. 60, Back of Belleville Reservoir Property	11,113.86	
No. 61, Portion Right of Way Supply Main No. 2.....	450.00	
No. 62, Portion Right of Way Supply Main No. 2.....	339.00	
Carried forward.....		$9,790,997.00

SCHEDULE OF PROPERTY—CONTINUED.

Brought forward		$9,790,997.00
No. 63, Portion Right of Way Supply Main No. 2	389.55	
New City Stables	14,823.57	
Land for Drilled Wells, Belleville, N. J.	1,670.00	
		$114,793 09
INVENTORY.		
Street Mains, Stock and Material	32,330.19	
Hydrants on Hand	282.00	
Water Meters on Hand	3,767.00	
Meter Repair Account	425.00	
Tools	8,418.74	
Stable Stock and Fixtures	4,152.96	
Office Furniture, Fixtures and Fittings	9,470.48	
Cedar Grove Reservoir	1,612.30	
Petty Cash	306.07	
Water Meters owned and set by Department	41,049.00	
Insurance	385.82	
Bond and Mortgage	600.00	
		102,799.56
New Water Supply		6,029,374.71
Total		$9,061,589.20

ACCOUNTS RECEIVABLE, December 31st, 1902.

Advance Water Rent Account.....	$41,701.42	
Fractional Water Rent Account.....	726.81	
Measured Water Account.....	40,356.09	
Special Water Rent Account.....	1,565.52	
Building Account	39.38	
Arrears Water Rent Account.....	3,491.78	
Service Collection Account.....	576.50	
Sundry Personal Account.....	38,711.44	
Total		$127,168.94

Note.—Item, Sundry Personal Account, $38,711.44 is made up as follows:

Accounts due from individuals.....	$4,822.22	
Accounts due from City of Newark.....	33,889.22	
		$38,711.44

FUND FOR THE CONSTRUCTION OF A STORAGE RESERVOIR.

Cash Account, Dec. 31st, 1902.

Balance, January 1st, 1902	$5,724.81	
Interest on Investments.... $3,500.00		
Rents Real Estate..... 160.00		
Total Receipts for 1902.....	3,660.00	
		$9,384.81
Fidelity Trust Company—Searching Titles for Pipe Lines and Reservoirs	2,738.00	
James McCue, Purchase of Land....	2,143.50	
W. D. Boyd, Purchase of Property in West Milford	500.00	
Total Disbursements for 1902..		5,381.50
Balance to Credit of Account with City Treasurer, December 31st, 1902		$4,003.31

TRIAL BALANCE.

	Dr.	*Cr.*
Cash	$4,003.31	
Bond Account	50,000.00	
Ivy Hill Property	81,828.40	
Belleville Property	13,965.35	
Charlottesburgh Property	50,670.07	
Storage Reservoir Account		200,467.13
	200,467.13	200,467.13

REAL ESTATE AND SECURITIES.

Registered Newark City Water Bond No. 9	50,000.00
Ivy Hill Property, South Orange, N. J.	81,828.40
Belleville, N. J., Property	13,965.35
Charlottesburgh, N. J., Property	50,670.07
	196,463.82


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N. J.

332996

ANNUAL REPORT

OF THE

Board of Street and Water Commissioners

OF THE

CITY OF NEWARK, N. J.

FOR THE YEAR

1903

ANNUAL REPORT

OF THE

Board of Street and Water Commissioners

OF THE

CITY OF NEWARK, NEW JERSEY.

FOR THE YEAR ENDED DECEMBER 31, 1903.

OFFICERS AND MEMBERS.

PRESIDENT,	JOSEPH S. VINSON, 277 WALNUT STREET
COUNSEL,	HENRY YOUNG, 800 BROAD STREET
CLERK OF THE BOARD.	WILLIAM E. GREATHEAD, 24 MILFORD AVENUE
GENERAL SUP'T OF WORKS.	J. CROWELL MUNDY, 259 BELLEVILLE AVENUE
ENGINEER & SUP'T. DEPT. WATER,	MORRIS R. SHERRERD, 938 BROAD STREET
ENGINEER DEP'T. STREETS & HIGHWAYS,	ERNEST ADAM, 202 PESHINE AVENUE
ENGINEER DEP'T SEWERS & DRAINAGE,	EDWARD S. RANKIN, 751 HIGH STREET
CASHIER DEP'T WATER	*GEORGE M. VAN NAME, 177 ORCHARD STREET HENRY D. NORTHROP, 28 WAVERLY AVENUE

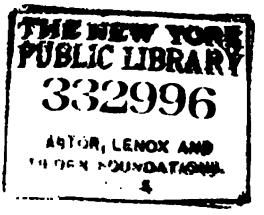
COMMISSIONERS.	RESIDENCE.
GEORGE M. BALLARD,	No. 29 Milford Avenue.
C. V. BAUMANN,	" 385 S. Tenth Street.
†WINTON C. GARRISON,	" 79 Washington Ave.
JOSEPH S. VINSON;	" 277 Walnut Street.
AUGUSTUS F. EGGERS,	" 21 S. Tenth Street.

*Died, July 18th, 1903

†Resigned, April 4th, 1903.

NEWARK, N. J.:
BAKER PRINTING CO.,
251 MARKET ST.

1904.


THE NEW YORK
PUBLIC LIBRARY
332996
ASTOR, LENOX AND
TILDEN FOUNDATIONS

To the Honorable the Mayor and Common Council of the City of Newark, N. J.

Pursuant to law, the Board of Street and Water Commissioners of the City of Newark, N. J., hereby presents its annual report, showing the condition of the public works and property of the city under the government, control, and management of said Board, for the fiscal year ended December 31st, 1903.

REPORT OF

THE ENGINEER AND SUPERINTENDENT OF THE DEPARTMENT OF WATER.

To the Board of Street and Water Commissioners of the City of Newark, N. J.

Gentlemen—Herewith is submitted the report of the condition and operation of the works of the Department of Water for the year ended December 31st, 1903:

CONSUMPTION STATEMENT FOR THE YEAR ENDED DECEMBER 31ST, 1903.

MONTH. 1903.	Total consumption Per Month. Million Gallons.	Average Daily Consumption. Million Gallons.	No. of Taps at Beginning of Each Month.	Average Daily Consumption per Tap per Million Gallons.	Mean Temperature.	Rainfall in Inches.
January.....	849.0	27.4	36.278	756	29.0	4.26
February.....	760.3	27.2	36.323	749	32.5	4.59
March.....	785.9	25.4	36.374	698	47.3	4.08
April.....	774.6	25.8	36.492	707	51.0	3.13
May.....	848.9	27.4	36.581	749	62.8	0.42
June.....	772.2	25.7	36.656	701	62.8	11.51
July.....	835.4	26.9	36.718	733	73.6	4.27
August.....	798.5	25.7	36.816	698	67.8	14.54
September.....	792.4	26.4	36.896	715	65.2	4.56
October.....	837.8	27.0	36.960	731	55.5	13.26
November.....	799.3	26.6	37.041	718	40.1	0.92
December.....	861.0	27.8	37.121	749	28.2	3.56
Total.....	9715.3					69.10

Average daily consumption 26,610,961 gallons
" " " per tap..... 716 "
Approximate number of taps at the end of the year.....37,180

One of the accompanying folders gives the monthly water consumption of the city since 1892, when the gravity supply was introduced. Another folder shows graphically the result of the compulsory introduction of about 4,000 meters on wasteful consumers during 1899 and 1900. The average daily consumption per tap was reduced from 840 gallons in the year 1898, to 700 gallons for 1900. The result has practically extended for five years the period for which the present watershed development will be adequate. The effect on reducing the revenue of the department by these meters was slightly felt for two years, but the average yearly increase in water rent income became normal after that time. The voluntary introduction of meters by consumers to obtain the advantage of the absence of a minimum rate has been more apparent in the effect on the revenue than the meters introduced by the department. Some form of minimum rate should be adopted to equalize the charge for water to small metered consumers with those under the assessed rate, so that the cost of distributing water may be divided more equitably to all water takers.

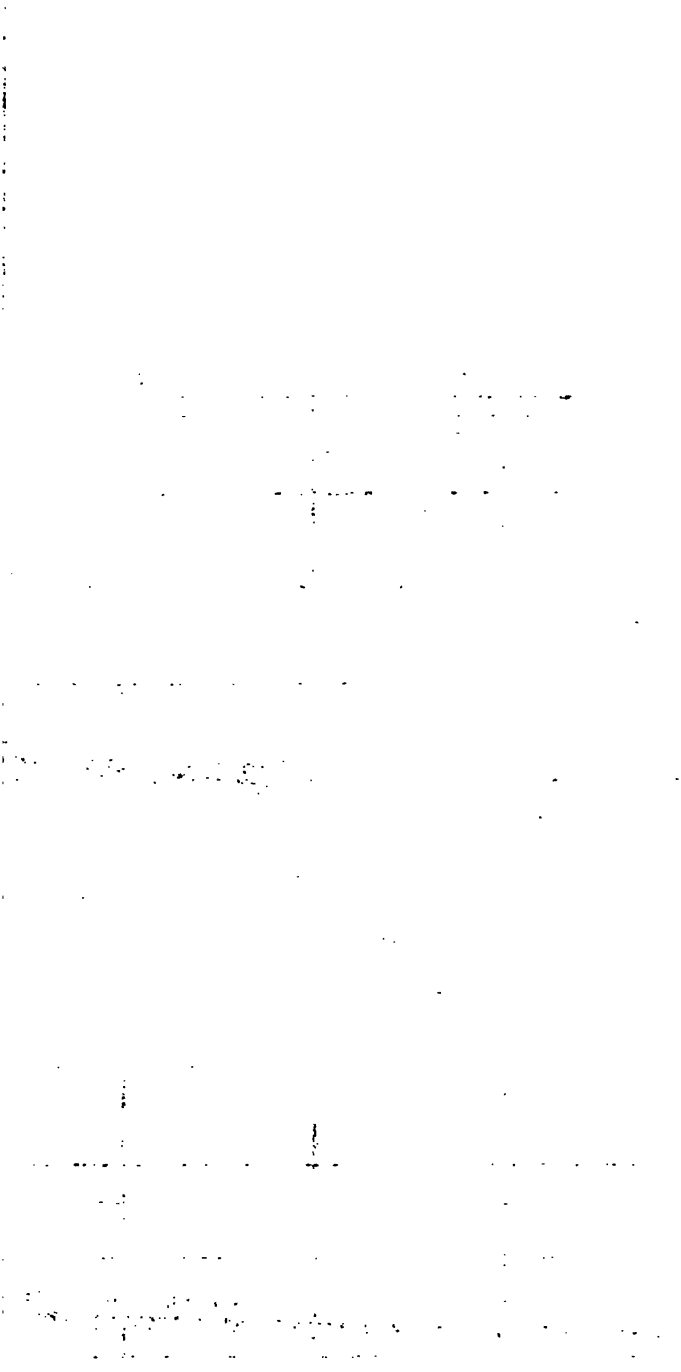
Detailed information in regard to street mains, services, meters, &c., may be found in the appended tables.

REVENUE FROM WATER.

A comparison of the amounts received and due for water alone for the years 1902 and 1903 shows the following:

1902.		
Received from metered water	$381,932.88	
Received from other water rents	313,228.17	
Total received from water rents (except special contracts)	$695,161.05	
Due from metered water	40,356.09	
Due from other water rents	45,959.39	
Actual and prospective normal revenue		$781,476.53





1903.

Received from metered water	$425,293.62	
Received from other water rents	304,239.47	
Total received from water rents (except special contracts)	$729,533.09	
Due from metered water	27,627.63	
Due from other water rents	43,396.32	
Actual and prospective normal revenue		$800,557.04
Increase in normal revenue		$19,080.51

SPECIAL CONTRACTS.

1902.

Amount received	$43,923.57	
Amount due	1,565.52	
Total revenue from Special Contracts		$45,489.09

1903.

Amount received	$46,788.96	
Amount due	243.91	
Total		$47,032.87
Increase from Special Contracts		$1,543.78

DISTRIBUTION.

The extensions to street mains in the city during the year 1903 were as follows:

189	lineal	feet	of	20-inch	pipe.
231	"	"	12	"	"
840	"	"	10	"	"
643	"	"	8	"	"
32,273	"	"	6	"	"
541	"	"	4	"	"

Total, 34,717 lineal feet or $6\frac{3037}{5280}$ miles.

Belleville Township 1,000 lineal feet

REPORT OF

THE ENGINEER AND SUPERINTENDENT OF THE DEPARTMENT OF WATER.

To the Board of Street and Water Commissioners of the City of Newark, N. J.

Gentlemen—Herewith is submitted the report of the condition and operation of the works of the Department of Water for the year ended December 31st, 1903:

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November.....	799 3	26.6	37.041	718	40.1	0.92
December.....	861.0	27.8	37.121	749	28.2	3.56
Total.....	9715.3					69.10

Average daily consumption 26,610,961 gallons
" " " per tap..... 716 "
Approximate number of taps at the end of the year.....37,180

missioners. In February, 1902, the matter was referred by the Board to the Common Council, asking that body to furnish the necessary funds to do the work. The estimated cost for the construction of this main with hydrants, &c., is $100,000. The revenue for furnishing water, under additional pressure over the ordinary service, for the supply of the higher buildings in the center of the city, and for fire protection and sprinkler systems, has been estimated at $2,500 per year. The advantage of the proposed main may be briefly stated as being equivalent to the concentration of three or four fire engines at any point along the main line of the proposed system, and the only necessary equipment to obtain this service would be hose carts and pipe men. The ordinary pressure of the present distribution system throughout the lower portion of the city could be immediately increased at the time of fires by opening connections which would be provided between this high pressure fire service line and the present street mains.

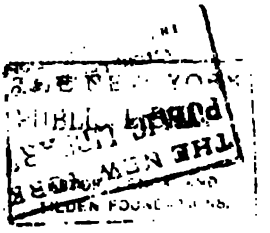
The installation of such a system should result in a reduction of the fire insurance rates on the entire territory affected, and it would seem that the advantages thus obtained by the property owners should be sufficient to justify the construction of the system and the payment of the annual charge, which would be six thousand dollars per year for interest and sinking fund if bonds were issued for this work. The amount of revenue to be received by the Water Department during the first year of the installation of this system would hardly be more than sufficient to pay for the expense of looking after hydrants and responding to alarms to open cross connections at time of fires. However, in a few years the increasing revenue could be applied to the payment of the fixed charges.

NEW STORAGE RESERVOIR.

The necessity of a large reservoir in connection with the distribution system has many times been pointed out by your present engineer and his predecessors, and the city is to be congratulated that the building of an adequate reservoir to supplement the New Water Supply is now in progress. The entire work in connection with the New Storage Reservoir is nearing completion and a summary of the complete project may not be out of place, as well as a report of results accomplished during the year.

The new gravity supply, from which water was first furnished to Newark in 1892, passed entirely under the control of the city in 1900, when the contract with the East Jersey Water Company was settled. Water is brought to Newark from the Pequannock watershed through two lines of steel pipe, each twenty-one miles long. It is delivered into small reservoirs which serve merely to regulate the pressure, there being within or near the city storage capacity only sufficient for a day's supply of water under normal draft.

Under these conditions, and until the new storage reservoir shall be completed, the security of Newark's water supply depends upon the constant integrity of these two lines of steel pipe twenty-one miles long, and as the two pipes are only twelve feet apart, an accident that injured one would be very liable to put the other also out of service. The possibility of such accidents were very vividly shown in the flood of last October, when in two places both pipes were undermined by greatly swollen streams, and for a number of days the city's water supply was in grave danger of being altogether cut off. If a break had occurred repairs could not have been made immediately, due to the general interruption of transportation caused by the flood. The pipes thus left unsupported are shown in the accompanying illustrations.



To insure an uninterrupted supply of water in case of such emergencies, a large storage reservoir near the city is essential, and the need of one to complete the New Water Supply has been recognized from the inception of that work. Definite steps looking to this end were taken in 1899, when the Cedar Grove Reservoir site was selected and preliminary surveys for a reservoir begun. The location chosen is on the westerly slope of First Mountain and lies partly in Verona township and partly in Little Falls township. The accompanying map shows the location of the reservoir and gives an outline of the entire project.

The Cedar Grove site has many advantages for the location of such a reservoir. The contour of the ground forms largely a natural basin, and with the construction of three dams or dykes, a storage capacity of about 700,000,000 gallons can be obtained. The elevation is such that the water surface of a reservoir will lie on the hydraulic grade line of the watershed conduits, thus insuring no loss of head in delivering water to the city nor diminution in carrying capacity of the conduits. Also, the location is only one mile from these conduits, and in such a relation between them and Newark, that a direct connection from the reservoir to the city will materially shorten the distance over the Belleville route and thus increase the available head, and possible maximum draft. This location gives an opportunity of supplying a large territory of high land adjoining Newark which is likely before long to look to the city for water. Early in 1900, attempts at private purchase having failed, condemnation proceedings were instituted to secure the necessary land; and in the winter of 1901, general plans were submitted to the Board. The complete undertaking included the Cedar Grove Storage Reservoir; a supply pipe leading from the watershed conduits to the reservoir; an outlet tunnel from the reservoir under First Mountain; and a distribution pipe from the end of the tunnel to the city.

As originally presented to the Board, the plans were worked out in detail for the supply pipe line, the reservoir, and a tunnel heading carried in the mountain to a shaft beyond the limits of the reservoir, from which shaft the tunnel could be extended in the future without putting the reservoir out of service. If the plans were carried out to this extent, the storage reservoir would be interposed as a safeguard to the water supply to the city against any accident to the upper 15 miles of watershed conduits, which includes the more unstable portions of the right-of-way, but would leave the supply still dependent upon the integrity of the lower six miles of conduits from Great Notch to Belleville, and to a lesser degree upon the pipes from Belleville to Newark. The Board very wisely decided to undertake the entire project, and ordered an independent line from the reservoir to the city.

In more detail, the plans as adopted provided for a connection with both watershed conduits at Great Notch, and a 60-inch steel supply pipe line leading to Cedar Grove Reservoir. The valves at this connection are so arranged that the entire supply from the watershed can be sent to the city either through the Cedar Grove Reservoir or by way of Belleville.

The general outline of the reservoir itself is shown in the accompanying map. The basin is long and comparatively narrow, and the reservoir is to be formed by closing gaps in the side and ends of a valley with three earth dams or dykes, having concrete core walls extending into the solid rock. The largest of these, the west dam, is about half a mile long. The north and south dams are much shorter. The water faces of all dams are to be protected by rip-rap and slope paving, while the tops and outside slopes will be seeded. The greatest depth of water will be 50 feet. In service, under normal conditions, all of the water used by Newark will be delivered into Cedar Grove Reservoir from the watershed,



Watershed Conduits showing effect of Flood of October, 1903. A culvert was washed out, and the pipes undermined and left unsupported for a distance of about 35 feet.

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TILDEN FOUNDATIONS

and thence sent out through the tunnel and distribution lines to the city. Besides serving as a storage place for a large amount of reserve water in case of an emergency, and incidentally increasing the efficiency of the watershed, the reservoir will answer another useful purpose in improving the quality of the water by allowing sedimentation and bleaching to take place. To secure this latter object proper circulation must be provided, and the structures and pipes within the basin are in a large measure arranged to attain this end. Another important advantage will be gained from the use of the New Storage Reservoir in avoiding the present necessity of sending roily water during periods of heavy rainfall, into the pipe lines at the Macopin Intake and thus into the distribution system.

The gate chambers at Cedar Grove Reservoir are of granite and will be surmounted by granite superstructures. All pipes under the dams are cast iron, while the circulation pipes within the reservoir are of concrete with an expanded metal core. The basin will be thoroughly grubbed and all surface soil removed to a depth of about six inches.

The outlet tunnel under First Mountain is seven feet in diameter and will have a carrying capacity sufficient for a greatly increased future draft. This tunnel will be operated under a head of about 50 feet. Its construction through solid rock and its concrete lining are especially adapted for this purpose. The length of the tunnel is about 3,000 feet.

The length of the 60-inch steel distribution line, from the end of the tunnel to Newark, is about seven miles. It is located almost entirely in the highways, and enters the city through Bloomfield avenue. At North Sixth street and Fifth street it will feed into the 36-inch lines which connect Belleville Reservoir and South Orange Avenue Reservoir. At convenient points along the distribution line, branches have been introduced for

future connections. A Venturi meter is placed in the line at the reservoir end.

The first contract in connection with the New Storage Reservoir was awarded in June, 1901, to the United States Cast Iron Pipe & Foundry Co. for the iron pipe and special castings needed in the work.

In August, 1901, the contract for constructing Cedar Grove Reservoir was awarded to Messrs. Stewart & Abbot. The total of their bid, based upon the estimated quantities, was $581,217.24, and the time set for the completion of the work was December 1, 1902. Not much actual construction was done during 1901, and in 1902 very little headway was made, the time for the completion of the work expiring with the reservoir less than half done.

Progress of the work was in part impeded by reasons beyond the control of the Contractors. It was found necessary to carry the excavation for the core wall of the west dam to a greater depth than was anticipated, as seamy and disintegrated rock extended in some places 30 feet into the ledge, or 60 feet below the surface of the ground. Preliminary test holes and drillings indicated ledge rock as found, but did not reveal the full extent and nature of the disintegration. This increased depth of the core wall will very materially increase the cost of the reservoir over the estimate and delayed the work. The Board appreciated that the Contractors were entitled to some extension on account of delay for this reason, and the time for the completion of the work was accordingly fixed one year later, December 1, 1903. But subsequent to the granting of this extension, progress has not been as satisfactory as was reasonably anticipated, and at the close of 1903, the reservoir is very far from completion. The north and south dams are nearly finished; the gate chambers are practically completed; a part of the concrete conduits have been successfully



Watershed Conduits showing effect of Flood of October, 1903. The washout was caused by the breaking of a dam on a small stream.



built; but the west dam still lacks 40 feet of being up to finished grade.

This unnecessary delay in the completion of the reservoir will materially increase the cost of engineering and inspection. The city has also expended up to the present time $1,500,000 on account of construction from which it can receive no benefit till the whole work is done, and on which interest charges must be paid. The Contractors were liberally treated in being granted the full extension of one year for which they applied after all of the uncertain elements had developed, and they are not entitled to a further extension.

All cement used in the construction of the reservoir has been tested, the results being as follows:

RESULTS OF TESTS, NEAT CEMENT BRIQUETTES.

Kind	No. Bbls. used	No. S'mpl's taken	No Briq. made	Average Tensile Strength.			
				1 Day	1 Week	1 Mo.	1 Year
Portland....	24200	1407	2814	346	677	823	954
Rosendale..	22400	1387	2770	93	169	213	372

The contract for the construction of the Outlet Tunnel was awarded in October, 1901, to the United Engineering and Contracting Co. at a bid based upon estimated quantities of $93,735.50. The excavation through the mountain was completed in February, 1903, and the tunnel was ready to be put into service in December, 1903. The final estimate will not exceed $93,000.00.

The contract for the 60-inch steel pipe line was awarded in March, 1902, to the T. A. Gillespie Co. at a bid based upon estimated quantities of $588,343.50. The manufacture of the pipes was begun in December, 1902, and outdoor construction in the spring of 1903. The contract was practically completed in October, 1903. The final estimate will not exceed $585,000.00. A supplementary contract made with this company for extending the pipe line on Bloomfield avenue was completed in December, 1903.

In October, 1903, a contract was awarded to John Hinchliffe for the construction of gate houses for Cedar Grove Reservoir for $17,500. Work under this contract has begun.

Practically all the work in connection with the New Storage Reservoir system has been completed except Cedar Grove Reservoir, and this has advanced to such a stage that a fairly accurate estimate of the final cost of the whole work can be made. Such an estimate follows:

Paid out to January 1st, 1904	$1,500,000.00
Due on pipe line	68,000.00
Due on tunnel	19,000.00
To complete reservoir	260,000.00
To finish gate houses	16,000.00
Engineering and inspection for 1904	15,000.00
Amount due Water Dept. general account	7,000.00
Incidental bills, 1904	5,000.00
Interest on temporary loans for 1904	70,000.00
Estimated amount of bonds to be issued	$1,960,000.00

From this total will be deducted whatever sums the Board collects as damages for increased cost caused by delay on the part of the Contractors. Interest charges on temporary loans are also included in the above total, as well as the cost of three miles of 36-inch main laid between Belleville Reservoir and South Orange Avenue Reservoir. These extra items taken from the above estimated final cost gives the following:

Estimated final cost		$1,960,000.00
Less interest on temporary loans paid to Jan. 1, 1904	$70,000	
Less interest on temporary loans during 1904	70,000	
Less cost of 3 miles 36 in. pipe (not including interest)	170,000	
		310,000.00
Cost of Reservoir, Tunnel and Pipe Line		$1,650,000.00

This is an excess of 10 per cent. of the total cost of construction of the New Storage Reservoir project over the first preliminary estimated cost of $1,500,000.00, and



Watershed Conduits near Macopin Intake during Flood of October, 1903. When the conduits were laid the Pequannock River was diverted and the pipes laid in the old river bed. During the flood the river overflowed its banks and returned to the old course, undermining the pipes for about 75 feet.



is the total amount which in all fairness should be considered as the increased cost of the work, the principal reason for which was extra depth of core wall due to the disintegrated nature of the rock, &c., and for this extra expenditure, the city is getting full return in additional security.

The city has paid for land in rights of way for Cedar Grove Reservoir, tunnel and pipe line $91,839.39, and the expense in connection with condemnation proceedings to secure this land and rights of way has been $3,870.95. These items are included in the above estimate of total cost.

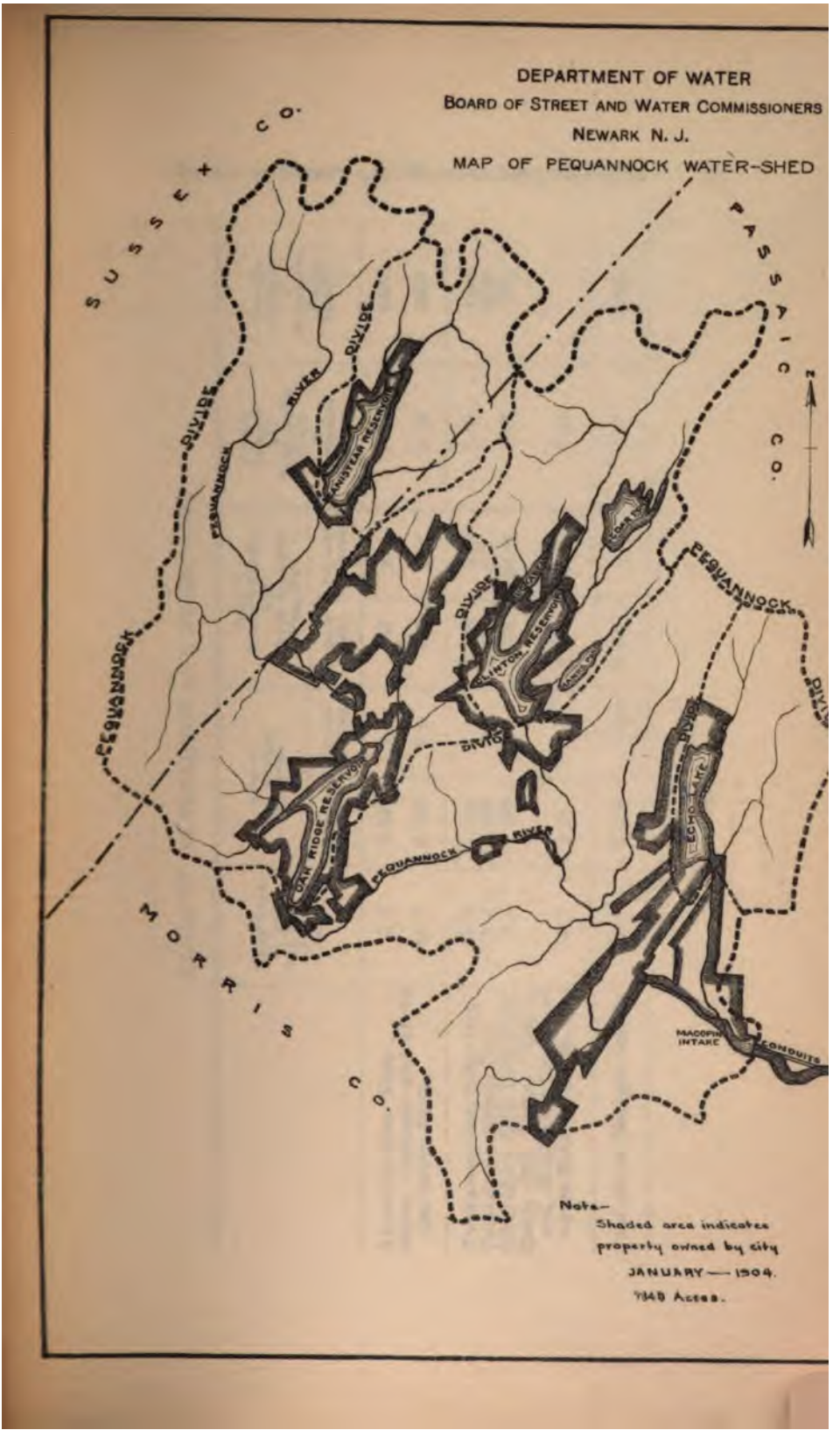
NEW WATER SUPPLY.

In previous reports it has been stated that records of the rainfall and run-off on the Pequannock watershed were being kept. These records in tabluated form are herewith presented.

Watersheds have their local peculiarities, and the quantity of the supply which may be safely depended upon from any drainage area can be accurately estimated only after long continued gaugings have been made of the actual run-off of the streams. Gaugings have now been made at the Pequannock watershed for twelve years; and while it is probable that in the future a period of more severe drought will occur than has been experienced since these records have been kept, yet they have been continued long enough to be of substantial value.

In the use of these records the development of the watershed and some of its physical characteristics should be taken into account. In outline the watershed is shown on the map. It will be noticed that Clinton Reservoir receives the entire drainage from one of the upper branches of the Pequannock; that Canistear Reservoir supplements Oak Ridge Reservoir in storing drainage from the entire upper portion of the main river; and that the lower portion of the watershed, about a

third of the entire drainage area, has no storage development whatever. Echo Lake is a natural body of water from which a comparatively small amount may be drawn. A tabulated statement concerning the areas of the watershed and reservoir capacity is given here as explanatory of the map.


DEPARTMENT OF WATER
BOARD OF STREET AND WATER COMMISSIONERS
NEWARK N. J.
MAP OF PEQUANNOCK WATER-SHED
SUSSEX CO.
PASSAIC CO.
MORRIS CO.
PEQUANNOCK RIVER
PEQUANNOCK
RIVER
RINGWOOD RESERVOIR
CLINTON RESERVOIR
OAK RIDGE RESERVOIR
ECHO LAKE
MACOPIN INTAKE
CONDUITS
Note—
Shaded area indicates
property owned by city
JANUARY — 1904.
7148 Acres.

AREAS OF WATERSHEDS AND RESERVOIRS.

	Gross Area of Land and Water. Square Miles.	Area of Full Storage Reservoir.		Area of Natural Ponds and Storage Reservoir When Full.		Area of Swamps per Topographic Maps of Geological Survey.	Storage Capacity of Reservoirs. Million Gallons
		Square Miles.	Per cent. of Area.	Square Miles.	Per cent. of Area.		
Above Canistear Dam.....	5.6	0.547	9.3	.547	9.3	0.45	2407
Below Canistear and above Oak Ridge Dam.....	21.7	0.597	2.9	.652	3.0	1.19	2555
Total above Oak Ridge Dam.	27.3	1.144		1.199	4.39	1.64	4962
Total above Clinton Dam....	9.4	0.662	7.2	0.914	9.7		3518
Total above Echo Lake Dam.	4.6	0.468	10.0	0.468	10.0	0.76	612
Below Oak Ridge, Clinton, and Echo Lake Dams and above Macopin Intake.....	21.2	0.02	0.1	0.04	0.2	0.67	
Total above Macopin Intake.	62.5	2.294	3.67%	2.621	4.2%	3.07	9092

At least 75 per cent. of the watershed is of a rugged and mountainous nature and the territory is sparsely settled.

The run-off records are accompanied by statements of unavoidable waste, amount utilized for water supply, and the amounts in storage. These statements are taken from a calculation made to determine whether sufficient reservoir storage had been provided to enable fifty million gallons per day to be drawn from the Pequannock watershed. They are based upon the supposition that each day since June 1, 1891, fifty million gallons had been drawn through the conduits from the watershed, but all data used is from actual gaugings. Up to the end of 1895, the gaugings of the East Jersey Water Co. were taken; since that time those of the Newark Water Department have been used. In this calculation after September, 1900, when the entire supply was turned over to the city, Canistear Reservoir and Echo Lake were also included with Clinton and Oak Ridge Reservoirs, which were previously the only ones considered.

TABLE OF WATER-SHED YIELD, ETC.

Gauges read to obtain average rainfall.	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903
	Macopin	Oak Ridge and Charlottesburg.	Oak Ridge and Charlottesburg.	Oak Ridge and Charlottesburg.	Oak Ridge and Charlottesburg.	Oak Ridge, Charlottesburg and Newfoundland.						

DATA CONCERNING PEQUANNOCK WATER-SHED.

Year.	Yield or Actual Natural Run-off of Entire Water-shed above Macopin Intake Dam in Mil. Gals.	Unavoidable Waste under draft of 50 Mil. Gals. per day (See note for Storage Capacity).	Amount Utilized for Water Supply if 50 Mil. Gals. per day had been drawn since June 1, 1891 (See note for Storage Capacity).	Average Rainfall in Inches.	Run-off in Inches Depth on Drainage Area (62.5 sq. m.)	Ratio of Run-off to Rainfall	Volume in Storage if 50 Mil. Gals. per day had been drawn since June 1, 1891. (See note for Storage Capacity).	
							Maximum	Minimum
	1	2	3	4	5	6	7	8
1891	10,486	836	9,650	*....	9.66		5,262	2,060
1892	22,802	7,308	15,494	45.41	21.00	0.46	6,073	1,835
1893	35,607	13,500	22,107	49.73	32.79	0.66	6,073	2,617
1894	30,830	12,827	18,003	44.62	28.39	0.64	6,073	2,871
1895	20,601	8,437	12,164	36.67	18.97	0.51	6,073	172†
1896	33,389	8,890	24,499	51.89	30.75	0.59	5,760	167
1897	31,893	13,409	18,484	57.97	29.37	0.51	6,073	4 220
1898	31,465	14,310	17,155	51.39	28.98	*0.56	6,073	2,146
1899	29,187	14,196	14,991	47.94	26.88	0.56	6,073	1,332
1900	23 348	8,718	14,630	42.00	21.50	0.51	6,073	1,262
1901	34,676	9,788	24,888	64.69	31.94	0.49	9,092	887†
1902	38,795	20,594	18,201	60.44	35.73	0.59	9,092	8,277
1903	50,011	31,811	18,200	64.79	46.06	0.71	9,092	7,319

Data for 1891 include 7 months only—June to December.

*No record in watershed.
†Shows deficiency.

NOTE—Storage capacity prior to Sept. 30th, 1900 { Clinton.....3.518 / Oak Ridge,.2,555 } 6,073 Mil. Gals.

Storage capacity subsequent to Sept. 30th, 1900 { Clinton.....3,518 / Oak Ridge..2,555 / Canistear...2,407 / Echo Lake.. 612 } 9,092 Mil Gals.

The column "Unavoidable Waste" gives the total amount of water wasted over Macopin Intake Dam under a draft of 50 million gallons per day, and shows in a large measure what might be saved for use with an increased storage capacity. The tables show that in 1901 there would have been a deficiency in the supply of 887 million gallons under a daily draft of 50 million gallons. To have a continued uninterrupted supply of this latter quantity, the storage capacity should have been increased by at least the amount of the deficiency. Cedar Grove Reservoir, when completed, will add about 700 million gallons to the storage. The amount which could have been furnished daily during the period above mentioned under the present watershed development, would have been 47 million gallons. Cedar Grove Reservoir storage added would have made the daily available supply approximately 50 million gallons.

The minimum run-off in inches depth on the drainage area was 18.97 inches in the year 1895. A yield of 50 million gallons per day from 62.5 square miles is equivalent to an annual depth of water over the entire watershed of 16.8 inches.

The column "Amount Utilized for Water Supply" gives the quantity delivered into the conduits and added to storage.

RAINFALL ON PEQUANNOCK WATERSHED.

Month.	1893			1894			1895			1896			1897				1898			
	Oak Ridge.	Charlottesburg.	Average.	Oak Ridge.	Charlottesburg.	Average.	Oak Ridge.	Charlottesburg.	Average.	Oak Ridge.	Charlottesburg.	Average.	Oak Ridge.	Newfoundland.	Charlottesburg.	Average.	Oak Ridge.	Newfoundland.	Charlottesburg.	Average.
Jan.	3.49		3.49	2.07	2.28	2.18	3.60	4.01	3.80	1.67	1.89	1.78	2.21	2.53	2.85	2.53	4.54	5.15	4 79	4.83
Feb.	5.76		5.76	2.77	2.74	2.75	0.14	0.31	0 23	8.45	10.06	9.26	3.46	4.91	4.29	4 22	1.76	3.99	3.99	3.25
March	3.51		3 51	1.68	1.64	1.66	2.11	2.05	2.08	5.50	6.04	5.77	2.55	2.87	3.45	2.96	2.84	3.18	3.46	3.16
April.	3 27	3.50	3.38	2.48	2.46	2 47	5.22	5 76	5.49	0.81	0.69	0.75	3.65	3.55	3.54	3.58	3.23	4.43	4 10	3.92
May.	5.66	5.76	5.71	7.17	6.03	6 60	3.35	2.85	3.10	3.17	3 83	3.50	5.94	6.85	8.23	7.01	7.15	7.46	7.63	7.41
June	3.32	3.22	3.27	2 24	2.32	2 28	2.85	2.34	2.59	4.22	5.02	4 62	3.03	3.58	3.71	3.44	2.16	2 04	2.12	2.11
July	2.88	2.44	2.66	0.80	1.09	0.95	4.88	5.80	5.34	5.94	5.77	5.85	14.78	14.35	13.34	14.16	2.03	3.50	4.50	3.34
Aug.	6.60	7.14	6.87	2.60	2.65	2.62	2 13	2.38	2.26	2.83	2.47	2.65	4.44	6.75	7.97	6.39	5.71	6.30	5.91	5.97
Sept.	2.81	2.44	2.63	7.45	11 40	9.43	1.00	1.03	1.01	9.52	8.74	9.13	2.86	2.83	2 90	2.86	1.19	1.45	1.78	1.47
Oct.,	4.79	5.37	5 08	5.88	6.15	6.01	3.43	2.90	3.17	2.10	2.24	2.17	1.68	1.63	1.95	1.75	6 77	5.26	7.37	6.47
Nov.	4.05	4.12	4.08	3.35	3.46	3.41	3.11	4.86	3.98	5.32	5.68	5.50	4.96	4.89	5.20	5.02	6.75	6.24	5.41	6.13
Dec.	3.55	3.02	3.29	4.30	4 23	4.26	3.35	3.89	3.62	0.97	0 85	0 91	4 67	4.91	2.57	4.05	3.09	2.62	4.27	3 33
Total	49.69		49.73	42.79	46.45	44.62	35.17	38.18	36.67	50.50	53.28	51.89	54.23	59.65	60.00	57.97	47 22	51.62	55.33	51.39

RAINFALL ON PEQUANNOCK WATERSHED.—Continued.

Month.	1899				1900				1901				1902				1903			
	Oak Ridge.	New-foundland.	Charlottes-burg.	Average.	Oak Ridge.	New-foundland.	Charlottes-burg.	Average.	Oak Ridge.	New-foundland	Charlottes-burg.	Average.	Oak Ridge.	New-foundland	Charlottes-burg.	Average.	Oak Ridge.	New-foundland.	Charlottes-burg.	Average.
Jan.	3.92	4.01	3 38	3.77	3.94	3.90	4.29	4.04	1.69	2.42	1.96	2.02	3.68	4 47	4.35	4.17	3.68	4.18	4.77	4.21
Feb.	5.42	6.23	3.75	5.13	7.04	6.96	7.54	7.18	0.92	0 93	0.80	0.88	6,18	7.75	7.89	7.27	4.37	5.29	5.47	5.04
March	6.47	7.71	7 13	7.10	4.32	4.80	4 15	4.42	6.45	7.35	8.07	7.29	4.03	5.04	4.78	4.62	5.04	5.73	5.93	5.57
April	2.73	2.88	3.25	2.95	2.11	2.20	2.39	2.23	6.68	9.07	10.22	8.66	4.85	5.44	5.36	5.22	4.04	4.50	4 42	4.32
May	1.35	2.11	2.26	1.87	1.86	4.32	4.46	3.55	5.66	7.39	6.57	6.54	2.43	2 24	2.31	2 33	0.39	0.26	0.24	0.30
June	2.61	2.70	3.15	2.82	3.14	3.38	3.87	3.46	2.00	2.83	2.89	2.57	7.01	6.27	6.61	6.63	11.29	11.22	10.45	10 99
July	7.37	6 16	5.98	6.50	4.28	4.45	4.78	4.50	7.51	7 35	7.32	7.39	4.19	5.57	4.47	4.74	3.63	4.11	3.79	3.84
Aug.	3.14	3.56	3 60	3.43	2.40	1.98	1.64	2.01	11.81	12.49	12.11	12.14	3.55	3.94	4.09	3.86	7.27	7.66	7.78	7.57
Sept.	5.77	5.53	5 73	5.68	2.11	1.68	2.16	1.98	5.27	4.90	3.94	4.70	6.58	7.84	7.86	7.43	3.42	3.60	3.29	3.44
Oct.	1.21	1.45	2.76	1.81	1.83	2.65	2.76	2.41	1.91	1.82	1.66	1.80	5.50	6.11	6.06	5.89	12.90	14 10	14.06	13.69
Nov.	3.28	3.36	2.48	3.04	3.16	3.86	3.85	3.62	2.21	2.01	1.03	1.75	1,20	1.16	1.30	1.22	1 58	1,55	1.47	1 53
Dec.	3 28	3.94	4.30	3.84	2.13	2.60	3.06	2.60	7.92	9.48	9.45	8.95	6.02	7.71	6.85	7.06	3.73	4.50	4.63	4.29
Total	46.45	49.64	47.77	47.94	38.32	42.78	44.95	42.00	60.03	68.04	66.02	64.69	55 82	63.54	61.93	60.44	61.34	66.70	66.30	64.79

Elevation of Rain Gauges { Oak Ridge..... 825
New Foundland.. 800
Charlottesburg.. 720

The rainfall records at Oak Ridge and Charlotteburg were begun by the East Jersey Water Company and continued by the city. The records at Newfoundland have been kept by the city.

During the year, the city purchased the Booth Knife Factory property located on the Pequannock above Oak Ridge Reservoir, and has thus been able to do away with conditions which were a very serious menace to the purity of the water supply. The Board has adopted as a settled policy that land lying along all main streams in the watershed, which may be offered at a reasonable price, should be acquired by the city; the amount of land purchased in any one year being limited only by the funds available, and the reasonable offers made.

The drainage from Newfoundland, the largest town in the watershed, is likely to prove in the future the most serious source of danger to the purity of the water supply. This town lies along the Pequannock River below the reservoirs and only a short distance above the intake. Sanitary inspection throughout the watershed has always been thorough, and the Newark Board of Health has co-operated heartily with the Water Department, but no form of inspection can be made a positive safeguard against contamination, and therefore steps are being taken to see if a satisfactory sewerage system can be designed to provide for the disposal below the intake of the drainage of Newfoundland, and the adjacent houses.

The flood of October, 1903, caused some damage in the watershed. The effect, however, on the property of the city above the intake was insignificant, but the conduits, as has already been mentioned, were in very grave danger of being carried away at two places. The damage done by the washouts is clearly shown in the illustrations, and the trial which these pipes successfully withstood is a proof of the stability of their construction.

The new storage reservoir work is in charge of Mr. Carleton E. Davis as Resident Engineer, with Mr. Allen S.

Lozier and Mr. J. Ralph Van Duyne for principal assistants. The distribution system and reservoirs in the city are in charge of Mr. George Sanzenbacher, Assistant Engineer and Superintendent.

Respectfully,

M. R. SHERRERD,

Engineer and Superintendent Department of Water.

DETAIL STATEMENTS

to accompany

Report of the Engineer and Supt.

Department of Water.

ANALYSIS OF NEWARK WATER.

BY MR. H. B. BALDWIN, CHEMIST FOR BOARD OF HEALTH.

(Parts per 100,000)

Average of one sample per month per year, from 1897 to 1903.

Year.	Free Ammonia.	Albuminoid Ammonia.	Chlorine.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Temporary Hardness.	Total Solids	Loss on Ignition.	Fixed Mineral Residue.	Color.	Temperature Degrees F.
1897	.0022	.0141	.133	Trace.	.0112		4.12	1.99	2.13	.39	
1898	.0026	.0150	.142	"	.0129		4.42	2.05	2.37	.348	
1899	.00226	.0128	.167	"	.0097	1.771	4.42	2.05	2.37	.348	
1900	.00242	.0137	.181	"	.0142	2.093	4.433	1.991	2.442	.286	56
1901	.00252	.0154	.155	None.	0148	2.20	4.653	1.916	2.653	.32	53.5
1902	.00178	.0131	.165	"	.0089	2.041	4.195	1.852	2.335	.258	54.2
1903	.00108	.0105	.141	"	.0090	2.00	3.973	1.523	2.52	.247	54.5

STATEMENT OF PIPES LAID IN 1903.

Month, 1903.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. Diameter in Inches.						Stops	Hydrants.
		20 in.	12 in.	10 in.	8 in.	6 in.	4 in.		
Jan	Franklin St. (Silver Lake), from 36 in. cast iron pipe in North 6th St. and old Bloomfield Road to Eugene Place					613		1	1
"	Eugene Place (Silver Lake), from Franklin to Honiss Sts					653		2	
"	Honiss St., (Silver Lake), from Eugene Place to Belmont Ave.					868			
"	Belmont Ave. (Silver Lake), from 50 feet north of Bloomfield Ave to 150 feet north of Honiss St					2,043		4	2
"	Rose Street, from Bergen St. west					520		1	1
"	New Cross St., between Spring and Broad Sts					273			1
"	Schley St., from Bragaw Ave. south					220		1	
"	High St., from Academy St. north						75		
Feb	Ridge St., from dead end between 6th and 5th Aves. north					108			
"	Elwood Ave., from Lincoln Ave about 130 feet west					130			
March	Clifford St., from Van Buren to Sandford Sts					458		2	
"	Sandford St., from Clifford to South Sts					243			1
"	Avon Ave., from Jelliff to Peshine Aves			297				1	
"	Avon Ave., intersection of Bergen St			63					
"	Hawthorne Ave, from Bergen to Hunterdon Sts					248		2	1
"	Elwood Ave., from Washington to Lincoln Aves					360			
"	Elwood Ave., from Summer Ave east					204			
"	Elwood Ave., from Summer to Woodside Aves					288			
"	Tillinghast St., from Reeves Place east					388		1	1
"	Intersection of Mount Prospect and Elwood Aves					28		1	
	Carried forward			360		7645	75	16	8

STATEMENT OF PIPES LAID IN 1903.

Month, 1903.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. Diameter in Inches.						Stops.	Hydrants.
		20 in.	12 in.	10 in.	8 in.	6 in.	4 in.		
	Brought forward			360		7645	75	16	8
April....	New Cross St., east of Broad St. west					48			
"	Van Buren St., from Walnut St. to New York Ave.					248		1	1
"	Elwood Pl., from Lincoln Ave. to about 50 ft. east of Summer Ave.			..			426	2	
"	Fourth St., from dead end north of 2d Ave., south					447	...		1
"	Intersection of Orange and Broad Sts.			..	..	85		1	
"	Madison Ave., from Hunterdon St. to west side Chadwick Ave.					506		2	
"	Madison Ave., from Badger to Peshine Aves.					529		1	
"	Thirteenth Ave., from Morris Ave. to Hunterdon St					276		1	
May.....	Seventeenth Ave., from dead end west of Bergen St. to Fairmount Ave					279		1	
"	Rose St., from Bergen St. east					48		1	
June....	Murray St., from N. J. R. R. Ave. to Mulberry St. (Pa. R. R. Trac. Elev)		...		414			1	1
"	Schley St., from Hawthorne to Nye Aves.					418		1	
"	Shaw Ave., from Hobson St., east					148		1	
"	South St., across Pa. R. R				102				
"	Runyon St., across Bergen St					97		1	
"	Bigelow St., across Bergen St.					72			
"	N. J. R. R. Ave. from Thomas to Parkhurst Sts.; Parkhurst St., from N. J. R. R. Ave. west					379	...	2	1
	Carried forward			360	516	11225	501	32	12

STATEMENT OF PIPES LAID IN 1903.

Month, 1903.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. Diameter in Inches.						Stops.	Hydrants.
		20 in.	12 in.	10 in.	8 in.	6 in.	4 in.		
	Brought forward		...	360	516	11225	501	32	12
June	Runyon St., from Chadwick Ave. to 160 feet west of Seymour Ave.					395		2	1
"	Second Ave., from Highland Ave to Lake St.; Lake St., from 2d Ave. south					455		1	1
"	Downing St., from Adams to Jackson Sts		.			219			
"	Railroad Place (west side Pa. R. R.), from Commerce St. south					204			
"	Dawson St., from Johnson St. to South St.				...	684	...	2	0
July.....	Seymour Ave., from south side Madison Ave. north					221		2	
"	North Sixth St., from Delavan Ave. north					536		2	1
"	Dawson St., from north side Thomas to Parkhurst St....								
"	Avenue C, from Parkhurst to south side Harper St....								
"	Harper St , across Avenue C			...		800		2	1
"	Parkhurst St., across Dawson St. and Ave. C								
"	Astor St., across Avenue C								
"	Hunterdon St., south of Runyon St				...	75	...	1	
"	Tichenor St., from Dawson to Pacific Sts					493		1	
"	Berkeley Ave., from Clifton Ave. to Ridge St.; Ridge St., from Berkeley Ave. south		...			515		2	2
"	New St., between Colden and Hoyt Sts					230			
"	Commerce St., across Pa. R. R				87	55		2	
	Carried forward			360	603	16107	501	49	18

STATEMENT OF PIPES LAID IN 1903.

Month, 1903.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. Diameter in Inches.						Stops.	Hydrants.
		20 in.	12 in.	10 in	8 in	6 in.	4 in.		
	Brought forward.....			360	603	16107	501	49	18
August..	Seymour Ave., between Madison and Avon Aves					168		1	
"	Railroad Place, west side from about 200 feet south of Commerce St. to Market St., opposite Alling St.					325		1	
"	Fifth St., from dead end between Bloomfield and Abington Aves. north.					228			
"	Rose St., from dead end between Bergen and Kipp Sts. to Kipp St.	..				420		1	
Sept...	Hawthorne Ave., between Hunterdon and Peshine Ave					372		1	
"	Bigelow St., between Milford and Elizabeth Aves					135	...		1
"	Highland St., from Fairmount Ave. to Magnolia St					342		1	1
"	Stanton St., between Frelinghuysen and Sherman Aves					508		1	1
"	South Twelfth St., from 17th Ave., north		...			241		1	
"	Beverly St., west of Fabian Place	.				357		1	1
"	Avon Ave., from Badger to Ridgewood Aves			225					
"	Avenue A, from Miller St. to Poinier St.; Poinier St., east of Avenue A.					1,009	..	1	1
October .	Central Ave., from South 10th to South 11th Sts.					252			
"	Lincoln Ave., across Sylvan Ave					60			
"	Sylvan Ave., from Summer to Mount Prospect Aves					701		3	1
"	North Fourteenth St., from 7th to 6th Aves					947		2	1
	Carried forward			585	603	22172	501	63	25

STATEMENT OF PIPES LAID IN 1908.

Month, 1908.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. Diameter in Inches.						Stops.	Hydrants.
		20 in.	12 in.	10 in.	8 in.	6 in.	4 in.		
	Brought forward			585	603	22172	501	63	25
October	Delancey St., across Van Buren St	...				48		1	
"	Mechanic St., from Alling St. to Exchange Place; Exchange Place, from Mechanic St. to Hamilton St.; Hamilton St., from Exchange Place east to Pa. R. R.					636		3	
"	Osborne Terrace, from Hawthorne Ave. to Runyon St					429		3	1
"	Hawthorne Ave., from Peshine to Badger Aves					504		3	
"	Fifteenth Ave., from South 10th to South 11th Sts					240			
"	Eleventh Ave., from Fairmount to Littleton Aves					192			
"	Branford Place, from Halsey St. east					311		2	
Nov.	Badger Ave., from Hawthorne to Watson Aves					844		1	1
"	Bloomfield Ave., intersection of 5th St	60						3	
"	North Sixth St., north of Bloomfield Ave	45						3	
"	Fifth St., north and south of Bloomfield Ave	72							
"	North Sixth St., south of Bloomfield Ave	12							
"	Clifton Ave., Res. for erection of a fountain			255	40	15	40	4	
"	Jelliff Ave., from Hawthorne Ave. south	...				700		1	1
"	Peshine Ave., from Hawthorne Ave. south					796		1	1
"	Clinton Ave., from Shanley Ave. to Ingraham Place		231					1	
"	Roseville Ave., from Bloomfield Ave. south	...				612			
Dec.	South Sixteenth St., from 18th Ave. south					256		2	
	Carried forward	189	231	840	643	27755	541	91	29

STATEMENT OF PIPES LAID IN 1903.

Month, 1903.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. Diameter in Inches.						Stops.	Hydrants.
		20 in.	12 in.	10 in.	8 in.	6 in.	4 in.		
	Brought forward			360		7645	75	16	8
April....	New Cross St., east of Broad St. west					48			
"	Van Buren St., from Walnut St. to New York Ave.					248		1	1
"	Elwood Pl., from Lincoln Ave. to about 50 ft. east of Summer Ave.			..			426	2	
"	Fourth St., from dead end north of 2d Ave., south					447	...		1
"	Intersection of Orange and Broad Sts.			..	..	85		1	
"	Madison Ave., from Hunterdon St. to west side Chadwick Ave.					506		2	
"	Madison Ave., from Badger to Peshine Aves.					529		1	
"	Thirteenth Ave., from Morris Ave. to Hunterdon St					276		1	
May.....	Seventeenth Ave., from dead end west of Bergen St. to Fairmount Ave					279		1	
"	Rose St., from Bergen St. east					48		1	
June	Murray St., from N. J. R. R. Ave. to Mulberry St. (Pa. R. R. Trac. Elev)				414			1	1
"	Schley St., from Hawthorne to Nye Aves.					418		1	
"	Shaw Ave., from Hobson St., east					148		1	
"	South St., across Pa. R. R				102				
"	Runyon St., across Bergen St					97		1	
"	Bigelow St., across Bergen St.					72			
"	N. J. R. R. Ave. from Thomas to Parkhurst Sts.; Parkhurst St., from N. J. R. R. Ave. west					379	...	2	1
	Carried forward			360	516	11225	501	32	12

STATEMENT OF PIPES LAID IN 1903.

Month, 1903.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET. Diameter in Inches.						Stops.	Hydrants.
		20 in.	12 in.	10 in.	8 in.	6 in.	4 in.		
	Brought forward		...	360	516	11225	501	32	12
June	Runyon St., from Chadwick Ave. to 160 feet west of Seymour Ave	...				395		2	1
"	Second Ave., from Highland Ave to Lake St.; Lake St., from 2d Ave. south					455		1	1
"	Downing St., from Adams to Jackson Sts		.			219			
"	Railroad Place (west side Pa. R. R.), from Commerce St. south					204			
"	Dawson St., from Johnson St. to South St				...	684	...	2	0
July.....	Seymour Ave., from south side Madison Ave. north					221		2	
"	North Sixth St., from Delavan Ave. north					536		2	1
"	Dawson St., from north side Thomas to Parkhurst St								
"	Avenue C, from Parkhurst to south side Harper St								
"	Harper St, across Avenue C			...		800		2	1
"	Parkhurst St., across Dawson St. and Ave. C								
"	Astor St., across Avenue C								
"	Hunterdon St., south of Runyon St				...	75	...	1	
"	Tichenor St., from Dawson to Pacific Sts					493		1	
"	Berkeley Ave., from Clifton Ave. to Ridge St.; Ridge St., from Berkeley Ave. south		...			515		2	2
"	New St., between Colden and Hoyt Sts					230			
"	Commerce St., across Pa. R. R				87	55		2	
	Carried forward			360	603	16107	501	49	18

STATEMENT OF SERVICES FOR YEAR ENDED DECEMBER 31ST, 1903.

⅝ inch Services. Month.	No. of New Services.	No. of Services Renewed.	No. of Taps only.	No. of Stops and Boxes	No. of New Water Takers	No. of feet of Pipe.	Charges.
January.....	39	1	..	..	39	782.0	$564.68
February	45	1	2	2	47	1036.0	658.67
March	107	3	..	1	108	2317.0	1531.00
April	70	7	..	..	70	1559.0	1050.00
May	67	2	..	..	67	1578.0	972.01
June.....	56	2	1	2	58	1176.0	821.67
July..... ...	82	4	1	6	88	1723.5	1209.34
August	72	9	..	..	72	1575.0	1102.67
September...	62	15	2	3	65	1514.0	1054.67
October.....	72	7	..	..	72	1455.0	1078.00
November ...	69	6	..	3	72	1465.0	1053.33
December,...	54	2	..	..	54	1109.5	776.00
Total	795	59	6	17	812	17290.0	11872.04

STATEMENT OF SERVICES FOR YEAR ENDED DECEMBER 31ST, 1903.

1 inch Services. Month,	No. of New Services.	No. of Services Renewed.	No. of Taps only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of feet of Pipe.	Charges.
January.....	5	..	..	..	5	119.5	$100.00
February	3	3	..	..	3	119.5	120.00
March.	5	5	..	..	5	210.0	200.00
April	11	2	..	..	11	252.5	260.00
May.....	2	4	..	..	2	120.5	120.00
June.....	1	4	..	..	1	123.0	100.00
July.....	12	3	..	..	12	264.0	300.00
August	..	4	..	..	..	105.5	80.00
September...	2	4	..	..	2	136.5	121.33
October.....	6	3	..	..	6	145.0	180.00
November ...	7	2	..	..	7	202.5	180.00
December....	..	2	..	..	6	173.0	40.00
Total	60	36	..	..	60	1971.5	1801.33

RECAPITULATION 1903.

Size	No. of New Services	No. of Servic's Renewed	No. of Taps Only	No. of Stops and Boxes	No. of New Water Takers	No. of feet of Pipe	Charges
⅝ Inch.....	795	59	6	17	812	17,290.0	$11,872.04
1 Inch.....	60	36	0	0	60	1,971.5	1,801.33
Totals...	855	95	6	17	872	19,261.5	$13,673.37

METERS SET BY CONSUMERS 1903.

Month, 1903.	LAMBERT-BEE. Inches Diameter.						NASH. Inches Dia.				TRIDENT. Inches Diameter.							Crown In. Dia.		Hersey. In. Dia.	Gem. In. Dia.	Worthington. In. Dia.	Totals.
	5/8	3/4	1	1 1/2	2	3	5/8	1	1 1/2	2	5/8	1	1 1/2	2	3	4	6	5/8	1	5/8	4	5/8	
January	2	..	2	..	1	1	44	..	..	..	19	..	..	2	..	1	..	..	..	..	..	..	72
February	21	..	1	..	..	..	18	1	1	..	20	6	..	1	..	..	..	..	..	..	..	..	69
March	35	..	2	1	..	1	30	..	..	..	23	5	..	..	1	..	..	..	..	1	..	..	99
April	3	..	..	..	2	..	8	..	..	..	158	9	..	3	..	1	..	..	..	..	..	..	184
May	149	..	..	1	..	..	148	..	..	..	195	13	..	2	..	..	..	1	..	..	1	1	511
June	83	..	..	2	..	..	..	..	..	..	74	4	..	..	..	..	..	1	..	..	..	1	165
July	35	..	1	..	1	..	..	..	..	..	45	5	..	1	2	..	.	..	..	..	..	..	90
August	32	..	..	..	1	1	1	..	..	1	46	6	1	2	..	..	.	..	..	..	..	..	91
September	41	..	1	..	1	..	..	..	..	..	31	7	..	..	..	..	..	..	..	..	..	..	81
October	32	..	..	..	2	..	..	..	..	..	33	6	..	..	1	..	..	..	..	..	..	..	74
November	92	1	..	..	3	..	..	..	..	..	89	9	..	1	..	1	..	..	..	..	..	..	196
December	16	..	..	..	3	..	..	..	..	..	82	8	..	1	1	1	1	..	..	..	.	..	113
Totals	541	1	7	4	14	3	249	1	1	1	815	78	1	13	5	4	1	2	1	1	1	2	1745

Number of Meters in use January 1st, 1903	13,274
Total number of Meters set during 1903	1,745
Total number of Meters in use January 1st, 1904	15,019

SPECIAL SERVICE CONNECTIONS FROM JANUARY 1st, 1903, TO DECEMBER 31st, 1903.

Month	1½ Inch	2 Inch	3 Inch	4 Inch	6 Inch	Total
January	..	1	..	..	..	1
February	..	1	1	1	..	3
March	..	1	2	2	1	6
April	..	4	..	4	..	8
May	1	5	..	..	..	6
June	..	3	2	..	..	5
July	..	3	1	..	..	4
August	..	2	1	..	..	3
September	..	5	..	..	..	5
October	..	2	..	1	..	3
November	..	2	1	1	..	4
December	..	2	1	2	..	5
Total	1	31	9	11	1	53

HYDRANT STATEMENT.

For the Year Ended December 31st, 1903.

LOW SERVICE.

Month.	No.	Location.	Diam.
Jan.	1.	New Cross St., north side, between Spring and Broad St.	6
Feb.	2.	Ann St., west side, middle of block between Hamburg Pl. and New York Ave	4
April	3.	Irving St., north side, middle of block, between Lincoln and Summer Aves	4
	4.	N. W. corner Irving St. and Lincoln Ave	4
May	5.	Oraton St., west side, in front of No. 94, between Chester and Elwood Aves	4
	6.	Elliot St., north side, middle of block between Summer and Washington Aves	4
June	7.	Madison St., west side, middle of block between Ferry and Lafayette Sts	6
July	8.	N. E. corner Frelinghuysen Ave. and Queen St.	4
	9.	N. W. corner Dawson and Parkhurst Sts	4
August	10.	N. E. corner Market St. and N. J. R. R. Pl., south side	6
Sept.	11.	N. W. corner Stanton St. and Frelinghuysen Ave.	6
	12.	Poinier St., nor side, east of Ave A	4
Oct.	13.	Sylvan Ave., north side, middle of block, between Summer and Mt. Prospect Aves	6
Dec.	14.	Seabury Pl., west side, middle of block between Delavan and Elwood Aves	6
	15.	Seabury Pl., west side, south of Elwood Ave.	6
	16.	S. W. corner Centre St. and alley east of River St.	6
	17.	Alley east of River St. at dead end of pipe 400 ft. south of Centre St	6

HIGH SERVICE.

Month.	No.	Location.	Diam.
Jan.	18.	North 6th St., south side, at Old Bloomfield Road	6
	19.	Belmont Ave. (Silver Lake) east side, 150 ft. north of Honiss St., at E. R. R.	4
	20.	Rose St., east side between Bergen and Kipp Sts.	4
March	21.	S. W. corner Hawthorne Ave. and Hunterdon St.	4
	22.	Tillinghast St., north side, middle of block between Osborne Terrace and South 10th St.	4
April	23.	Hartford St., north side, middle of block between Hudson St. and Morris Ave.	4
	24.	4th St., west side, between 2nd and 3rd Aves.	4
June	25.	Bergen St., west side, middle of block between Rose St. and Avon Ave.	6
	26.	N. W. corner Runyon St. and Chadwick Ave.	4
	27.	Lake St., east side, 200 ft. south of 2nd Ave.	4
July	28.	North 6th St., west side, at dead end north of Delavan Ave.	4
	29.	Hunterdon St., west side, 225 ft. south of Runyon St.	4
	30.	Ridge St., west side, 200 ft. south of Berkley Ave.	4
	31.	N. W. corner Berkley and Clifton Aves.	4
August	32.	Bergen St., west side, middle of block between Warren and Cabinet Sts.	4
Sept.	33.	S. W. corner Hawthorne and Peshine Aves.	4
	34.	N. W. corner Bigelow St. and Elizabeth Ave.	6
	35.	N. E. corner Highland and Magnolia Sts.	4
	36.	Beverley St., north side, 300 ft. west of Fabyan Pl.	4
	37.	14th Ave., north side, opp. South 8th St.	6
	38.	Sylvan Ave., north side, between Lincoln and Mt. Prospect Aves., opp. 149	4
	39.	North 14th St., east side, middle of block between 6th and 7th Aves.	4
	40.	N. E. corner Osborne Terrace and Hawthorne Ave.	6
	41.	S. W. corner Badger and Hawthorne Aves.	6
Nov.	42.	Badger Avenue, west side, middle of block between Hawthorne and Watson Aves.	6
	43.	Jelliff Ave., west side, middle of block between Hawthorne and Watson Aves.	6
	44.	Peshine Ave., west side, middle of block between Hawthorne and Watson Aves.	6
Dec.	45.	Littleton Ave., west side, middle of block between 15th and 16th Aves	4
	46.	2nd St., west side, 200 ft. south of Montclair Ave.	6

HYDRANTS REPLACED DURING THE YEAR 1903.

LOW SERVICE.

Month.	No.	Location.	Diam.
Jan.	1.	S. W. corner 8th Ave. and Broad St.	6
Feb.	2.	S. W. corner Congress and Market Sts.	4
	3.	Prospect St., west side, middle of block, between Ferry and Market Sts.	4
Mar.	4.	N. W. corner Van Buren and South Sts.	6
	5.	N. W. corner Van Buren and Delancey Sts.	6
	6.	N. E. corner Halsey and Academy Sts.	4
	7.	Van Buren St., west side, middle of block, between Clover and Ferry Sts.	4
	8.	N. W. corner Van Buren and Clover Sts.	4
	9.	S. E. corner Murray and Brunswick Sts.	4
	10.	N. W. corner Read and Market Sts.	4
Apr.	11.	N. E. corner Irving St. and Summer Ave.	4
	12.	Belleville Ave., east side, opposite Crittenden St.	4
	13.	N. E. corner Oliver and McWhorter Sts.	4
May	14.	S. E. corner Bruen and Hamilton Sts.	4
	15.	N. E. corner Mulberry and Pennington Sts.	4
	16.	N. E. corner Elliott St. and Summer Ave.	4
	17.	Mulberry St., east side, 200 feet south of Thomas St.	4
June	18.	N. E. corner Mulberry and Thomas Sts.	6
	19.	S. W. corner Walnut and Pacific Sts.	4
	20.	4th Ave., west side, middle of block, between Passaic Ave. and Ogden St.	4
	21.	N. W. corner Parkhurst St. and N. J. R. R. Ave.	4
	22.	Market St., south side, at N. J. R. R. Ave.	6
	23.	S. W. corner Madison and Downing Sts.	4
	24.	S. W. corner Madison and Ferry Sts.	4

Month.	No.	Location	Diam.
July	25.	Ogden St., east side, opposite Orange St.....	6
	26.	S. E. corner Nesbitt St. and 8th Ave.....	4
	27.	Tichenor St., north side, between N. J. R. R. Ave. and Hermon St.....	4
	28.	N. W. corner Tichenor and Hermon Sts.....	4
	29.	S. W. corner R. R. Pl., west side, and South Canal.	6
	30.	N. W. corner Commerce St. and R. R. Pl., west side	6
	31.	E. Kinney St., north side, middle of block, between Jefferson and Adams Sts.....	4
Aug.	32.	Nutman St., east side, between Warren and New Sts.	4
	33.	Broad St., west side, middle of block, between 3rd and 4th Aves.....	4
	34.	S. E. corner Madison and Market Sts.....	6
	35.	Mt. Pleasant Ave., east side, between Oriental and Harvey Sts.	4
	36.	S. E. corner Mt. Pleasant Ave. and Harvey St....	4
	37.	Market St., north side, in front of 319.....	6
Sept.	38.	N. W. corner Dawson and Thomas Sts.....	4
	39.	S. W. corner Plane and State Sts.....	6
	40.	N. E. corner Montclair and Summer Aves.....	4
	41.	Montclair Ave., north side, opposite 101.....	4
	42.	N. W. corner of Emmett and Broad Sts.....	
	43.	S. W. corner Pennsylvania Ave. and Parkhurst St.	4
Oct.	44.	N. E. corner Brandford Pl. and Halsey St.....	6
	45.	N. W. corner Van Buren and Chestnut Sts.....	4
Nov.	46.	N. E. corner Broad and old Cross St. (vacated)..	4
Dec.	47.	Ferdon St., east side, east of Elm Road at Pa. R. R.	4

HIGH SERVICE.

Feb.	48.	N. W. corner Mt. Prospect and 2nd Aves.....	4
	49.	N. W. corner West St. and College Pl.....	4
	50.	18th Ave., north side, East of Springfield Ave....	4
Mar.	51.	Central Ave., south side, about 200 feet west of Hudson St.	6
	52.	S. W. corner Bloomfield and Highland Aves.....	4
	53.	N. E. corner Central and Morris Aves.....	4
	54.	Mt. Prospect Ave., west side, between 3rd and 2nd Aves.	4
Apr.	55.	N. W. corner Mt. Prospect and Bloomfield Aves..	4
	56.	Mt. Prospect Ave., west side, between Bloomfield and 3rd Aves., opposite No. 228.....	4

Month.	No.	Location.	Diam.
Apr.	57.	N. W. corner Hartford St. and Morris Ave.....	4
	58.	S. W. corner Hoyt St. and Central Ave.....	4
May	59.	N. E. corner Clinton and Ridgewood Aves.....	4
	60.	Johnson Ave., west side, middle of block, between Clinton Ave. and Alpine St.....	4
	61.	S. E. corner 18th Ave. and S. 13th St.....	4
	62.	N. W. corner Newton St. and S. Orange Ave.....	4
	63.	N. W. corner Bruce St. and S. Orange Ave.....	4
	64.	N. W. corner Bergen and Rose Sts.....	4
June	65.	N. W. corner 17th Ave. and Boyd St.....	4
	66.	S. 11th St., west side, 600 feet north of 18th Ave..	4
Aug.	67.	N. E. corner 17th Ave and Lewis St.....	4
	68.	N. E. corner 14th Ave. and Newton St.....	4
	69.	Dark Lane, south side, between Jones and Hayes St.	4
	70.	S. W. corner Boyden St. and 8th Ave.....	4
Oct.	71.	S. W. corner Roseville Ave. and Orange St.....	4
	72.	N. W. corner 11th Ave. and S. 8th St.....	4
	73.	N. W. corner 11th Ave. and S. 6th St.....	4
Nov.	74.	S. Orange Ave., north side, between S. 17th St. and 18th Ave.....	4
Dec.	75.	N. E. corner Clinton Ave. and Bergen St.....	4

HYDRANTS REMOVED DURING THE YEAR 1903.

MONTH.	LOCATION.	DIAMETER INCHES.
April.	S. E. corner River and Mulberry Sts. to S. W. corner River and Mulberry Sts	6
Sept.	Market St., north side, in front of 299 to Market St., south side in front of 298	6

RECAPITULATION.

New hydrants set on Low Service	17
New hydrants set on High Service	29
New hydrants replacing old on Low Service	47
New hydrants replacing old on High Service	28
Total new hydrants set, 1903	121

The total number of hydrants connected with the works at the end of the year was:

In the City on Low Service	1071
In the City on High Service	1250
Total in the City	2321
At the Belleville pump house and reservoir	4
Township of Belleville	0
Township of South Orange	3
Columbia Heights	14
Total	2342

FINANCIAL STATEMENTS.

ACCOUNTING DIVISION.

Department of Water.

YEAR ENDED DECEMBER 31, 1903.

To the Honorable the Mayor and Common Council of the City of Newark, N. J.

Gentlemen—In accordance with section 20 of the law creating the Board of Street and Water Commissioners of the City of Newark, which requires me to make a report of the receipts and expenditures at the close of each fiscal year, I herewith submit the following report of the financial transactions of the Departmet of Water for the year ended December 31st, 1903:

Cash balance, December 31st, 1902	$106,021.96
Receipts from all sources	881,054.59
	$987,076.55
Less disbursements on all accounts	865,546.66
Balance, December 31st, 1903	$121,529.89

WM. E. GREATHEAD,
Clerk of the Board.

Newark, N. J., March 1st, 1904.

W. E. Greathead, Clerk of the Board of Street and Water Commissioners.

Dear Sir—I herewith submit financial statements and trial balance of the Department of Water for the year ended December 31st, 1903.

Yours respectfully,

HENRY D. NORTHROP,
Cashier.

RECEIPTS FOR 1903.

Balance, January 1st, 1903		$106,021.96
Advance water rent collection	$290,768.01	
Hose collection	3,624.00	
Fractional water rent collection	1,043.59	
Sprinklers collection	2,817.00	
Building collection	5,343.81	
Special water rent collection	46,788.96	
Arrears water rent collection	643.06	
Measured water collection	425,293.62	
Service collection account	14,251.54	
Sales on service account	54.40	
Penalties and fines	2,908.68	
Rents, real estate	1,732.33	
Sundry personal account	55,785.59	
		$851,054.59
Appropriation for street main extension		30,000.00
Total		$987,076.55

DISBURSEMENTS FOR 1903.

(IN ITEMS.)

Monthly pay roll		$51,987.24
Weekly pay roll		105,208.30
Interest on water bonds		402,555.00
Sinking Fund		174,150.00
Petty expense:—		
Accounting division	$1,236.80	
Engineer and superintendent	1,859.76	
		3,096.56
Water meters		18,256.00
Meter repair parts		1,294.01
Insurance		728.59
Horse shoeing		599.44
Hay, oats, feed, etc.		1,801.77
Horse, wagon and truck hire		472.12
Harness and repairs		208.10
Wagon repairs		1,363.56
Stable supplies		111.68
New sleigh		40.00
Veterinary		4.00
New horses		400.00
Boarding of horses		1,200.00
Printing and Stationery		3,282.87
General supplies		4,263.43
General repairs		761.42
Curb and stop boxes		2,744.06
Lead pipe		3,178.30
Lumber		1,851.43
Gasolene and kerosene		642.19
General castings		2,912.45
Valves		825.79
Water gates		2,170.90
Iron pipe and castings		14,034.84
Pipe inspection		287.60
Solder		297.50
Pig lead		3,057.64
Jute		95.57
Curb stops		1,419.62

Wooden plugs	21.75
Earthen pipe	31.28
Galvanized iron pipe	98.12
Wrought iron pipe—special	439.00
Testing castings	61.80
Royalty on tapping machine	600.00
Board and meals	233.11
Coal and wood	773.45
Ice	128.19
Tools and repairs	1,079.35
Electric repairs	344.10
Freight	235.98
Mason material	660.22
New Hydrants	3,055.00
Hydrant repair parts	340.80
Rubber goods	274.43
Electric light	302.09
Electric motor and fan	339.33
Gas	311.14
Repairs to machinery	30.00
Telephone service	1,362.45
Telephone repairs	33.40
Re-paving street cuts	544.49
Legal services	329.40
Taxes	2,709.73
Advertising	175.20
Disinfectant	45.00
Addressograph supplies	221.04
Engineering supplies	112.70
Stenographer's services	5.00
Contract for installing electric light	55.00
Fruit trees	59.50
Flowers and plants	316.21
Surveying	15.00
Maps	80.00
Hose	152.82
Blue stone flagging	53.65
Twisted wire	216.69
Rent	145.81
Rent, telegraph poles	124.50
Tapping machine	175.00
Concrete and excavation—track elevation	1,258.70
General expense	45.00
Castings for fountain	204.00

Castings, special	282.72
Corporation cocks	662.02
Office furniture	68.60
Refunded	344.34
New boat	15.00
Steel bridge for track elevation	401.08
United States flag	14.98
Land for water shed	40,000.00
Paint and painters' supplies	656.51
Total	$865,546.66

TRIAL BALANCE.

December 31st, 1903.

Cash	$ 121,529.89	
Construction	2,689,358.04	
Coupon Trust Fund	35.00	
Coupon Bond Account		2,710,000.00
Registered Bond Account		7,167,000.00
Coupons Payable		35.00
Plumbers' Drafts		178.50
Petty Cash	306.07	
Fund for the Construction of a Storage Reservoir		16,293.75
Stable Stock and Fixtures	4,724.00	
Office Furniture. Fixtures and Fittings.	10,562.40	
Water Meter Account	2,391.75	
Department Meters	36,488.00	
Hydrant Account	282.00	
Insurance	714.69	
Bond and Mortgage	600.00	
Street Mains, Stock and Material	20,366.79	
Service Account	3,158.12	
Real Estate, General	114,793.09	
Tool Account	8,211.14	
Repair Water Meters	907.34	
Surplus and Deficiency	676,599.13	
New Water Supply	6,069,374.71	
Service Collection	624.50	
Advance Water Rent Collection Acc't.	39,676.35	
Fractional Water Rent Collection Acc't	991.94	
Building Collection Account	385.14	
Special Water Rent Collection Account	243.91	
Measured Water Collection Account	27,627.30	
Arrears Water Rent Collection Account	2,442.89	
Sundry Personal Collection Account	58,940.69	
Cedar Grove Reservoir Stock and Fixtures	1,326.25	
New Storage Reservoir	846.12	
Total	$9,893,507.25	$9,893,507.25

COMPARATIVE STATEMENT OF DISBURSEMENTS.

In 1902 and 1903.

	1902.	1903.
Street Main Extension	$28,661.64	$36,185.14
Feeders	957.05	7,461.02
Reconstruction	11,492.46	3,234.80
General Maintenance and Repairs	13,343.12	12,249.18
Repair of Tools	983.15	1,221.32
General Expense	7,245.75	7,703.72
Handling Material	1,306.76	1,371.11
Engineer and Superintendent, Expense	12,483.42	11,306.01
Accounting Division Expense	31,348.21	29,293.31
Meter Division Expense	12,483.42	14,859.06
Distributing Reservoirs	6,646.91	7,085.13
Meter Repairs	2,890.68	2,128.91
Repair Department Meters	1,306.79	1,148.00
" Belleville Reservoir	54.38	338.75
" South Orange Ave. Reservoir	581.53	177.33
" Services	6,015.38	4,243.65
" Hydrants, and Setting	3,922.57	3,485.72
Inspection	13,582.00	11,568.55
Stable Expense	6,420.40	6,609.65
Service Account	10,677.92	10,324.20
Pumping Stations	3,543.60	3,038.00
Maintenance New Water Supply	18,148.06	26,229.04
Miscellaneous Personal Charges, Labor	3,082.93	6,743.85
Stable Stock and Fixtures	885.00	459.90
Office Furniture	1,906.30	368.43
New Meters	17,493.00	18,100.00
New Hydrants	3,062.00	3,088.50
Insurance	385.82	686.22
General Supplies	2,759.17	2,834.36
New Tools	64.00	36.30
Repair Street Mains	1,950.75	876.35
Land for New Water Supply		40,000.00
Sinking Fund	172,800.00	174,150.00
Interest on Water Bonds	400,755.00	402,555.00
New Storage Reservoir	307.77	843.12
Loss and Gain, Refunding, Etc.	1,643.14	668.37
Miscellaneous, Material, Etc.	27,599.17	12,371.66
	$828,789.25	$865,546.66

Accounts Receivable.

December 31st, 1903.

Advance water rent account	$39,676.35
Fractional water rent account	991.94
Measured water account	27,627.30
Special water rent account	243.91
Building account	385.14
Arrears water rent account	2,442.89
Service collection account	624.50
Sundry personal account	58,940.69
Total	$130,932.72

Assets and Liabilities.

Cash Balance, December 31st, 1903	$ 121,529.89	
Property	8,964,410.51	
Accounts Receivable	130,932.72	
Coupon Trust Fund	35.00	
Coupon Bonds		2,710,000.00
Registered Bonds		7,167,000.00
Fund for the Construction of a Storage Reservoir		16,293.75
Coupons Payable		35.00
Plumbers' Drafts		178.50
Surplus and Deficiency	676,599.13	
Total	$9,893,507.25	$9,893,507.25

Schedule of Property, 1903.

Department of Water.

Belleville Pump House		$25,000.00
" Boiler House Extension		2,000.00
" Engineer & Firemen's Dwellings		10,000.00
" New Chimney		5,500.00
" Keeper's House		1,500.00
" Pumping Engine No. 1		5,000.00
" " " 2		5,000.00
" " " 3		15,000.00
" " " 4		20,000.00
" Receiving Reservoir		133,645.05
" New Boilers		15,638.31
River Wall, Dock and Basin		25,000.00
Driven Wells		22,275.01
Drilled Wells		36,172.98
Caisson Wells		2,453.80
Belleville Reservoir Appurtenances		8,508.93
High Service Engine House		15,000.00
High Service Engine House Extension		2,500.00
New Boiler, Clifton Avenue		2,000.00
High Service Pumping Engine No. 2		5,000.00
High Service Pumping Engine No. 3		5,000.00
High Service Reservoir, South Orange Avenue		94,585.27
Low Service Reservoir		167,221.56
Street Mains, General	$1,453,163.95	
1903	35,600.67	
		1,488,764.62
Pumping Main No. 1		79,352.28
Pumping Main No. 2		40,599.76
Supply Main No. 1		131,177.00
Supply Main No. 2		69,999.51
Supply Main No. 2, Section A		42,867.81
Distributing Main No. 2		54,539.34
Extra High Service Main		28,897.54
Twelfth Ward Feeder		6,131.67
Ingraham Place Feeder		1,207.59
Bridge Street Feeder		1,924.37
Regular High Service Feeder No. 2		18,901.97
Regular High Service Feeder No. 2, Extension		10,457.09
Forest Hill Feeder		5,908.33
Roseville Feeder		19,950.51
Seventh Avenue Feeder		4,475.14
South Street Feeder		2,209.65
Fourteenth Avenue Feeder		4,621.42
Carried forward		2,635,986.51

SCHEDULE OF PROPERTY—CONTINUED.

Brought forward	2,635,986.51	
Ferry Street Feeder	6,495.13	
South Ninth Street Feeder	711.09	
Fourteenth Street Feeder	1,468.57	
Waverly Avenue Feeder	819.91	
Hawthorne Avenue Feeder	717.64	
Verona Avenue Feeder	1,642.10	
Special High Service Feeder	1,025.56	
Feeders $6,854.73		
1903 7,461.02		
	14,315.75	
Distributing Main No. 2, Extension	4,109.44	
Distributing Main No. 1	51.29	
High Service Main No. 1	49.31	
High Service Main No. 2	19,614.06	
Low Service Supply Main No. 3	1,169.64	
Weir at Water Shed	1,182.04	
New Storage Reservoir Account	846.12	
		2,690,204.16
REAL ESTATE—		
No. 1. No. 128 Halsey Street	26,964.15	
" 5. Nominal	100.00	
" 6. Seventh and Summer Aves.	4,000.00	
" 12. Ground and Building for new City Stables	26,958.47	
" 13. Right of Way and Alley, Millbrook Sewer	75.00	
" 14. Drift Street at Factory St., Nominal	20.00	
" 16. Clifton Avenue Pump House.	6,000.00	
" 18. Low Service Reservoir, Nominal	1.00	
" 52. Hecker Street, Nominal	100.00	
" 53. South Orange Ave. Reservoir, Nominal	1.00	
" 54. Corner 14th Ave. and Ninth St	15,000.00	
" 55. Corner 14th Ave. and Eighth Street	7,500.00	
" 56. Belleville Pump House and Six Houses	11,883.64	
" 57. Opposite Pump House	1,693.92	
" 58. Belleville Reservoir, Nominal	1.00	
" 59. Part of Belleville Reservoir Property	532.50	
" 60. Back of Belleville Reservoir Property	11,113.86	
" 61. Portion of Right of Way, Supply Main No. 2	450.00	
Carried forward	112,394.54	

SCHEDULE OF PROPERTY—CONTINUED.

Brought forward	$112,394.54	
No. 62. Portion of Right of Way, Supply Main No. 2	339.00	
" 63. Portion of Right of Way, Supply Main No. 2	389.55	
Land for Drilled Wells, Belleville, N. J.	1,670.00	
		114,793.09
INVENTORY—		
Street Mains, Stock and Material	20,366.79	
Service Stock and Material	3.158.12	
Hydrants on Hand	282.00	
Water Meters on Hand	2,391.75	
Meter Repair Account	907.34	
Tools	8,211.14	
Stable Stock and Fixtures	4,724.00	
Office Furniture, Fixtures and Fittings	10,562.40	
Cedar Grove Reservoir	1,326.25	
Petty Cash	306.07	
Water Meters owned and set by Department	36,488.00	
Insurance	714.69	
Bond and Mortgage	600.00	
		90,038.55
New Water Supply		6,069,374.71
Total		$8,964,410.51

Expended on Account of New Storage Reservoir and Thirty-six Inch Cast Iron Pipe.

HIGH SERVICE SUPPLY PIPE LINE.

To December 31st, 1903.

NEW STORAGE RESERVOIR, TUNNEL AND SIXTY INCH STEEL PIPE LINE.

Labor	39,096.29	
Iron Pipe and Castings	80,470.36	
Inspecting Pipe	1,054.22	
Payments on Contracts	1,013,497.72	
Engineering Expense, etc.	16,108.94	
Interest on Loan	53,780.65	
Taxes	56.73	
Land	90,289.39	
Right of Way	1,550.00	
Expense of Condemnation	3,870.95	
Gate House	4,321.00	
		1,304,096.25
THIRTY-SIX INCH SUPPLY PIPE LINE. Between South Orange Ave. and Belleville Reservoirs.		
Labor	44,353.81	
Iron Pipe and Castings	95,978.19	
Interest on Loan	17,884.77	
Inspecting Pipe	1,000.91	
Carting Pipe	3,729.95	
Right of Way	3,450.00	
Caulking Machine	490.00	
Miscellaneous Material	25,304.90	
Work at Second River, and S. Orange Ave. and Eighth St.	920.12	
Expenses	1,571.00	194,683.65
Total		$1,498,779.90
Less Hay sold in 1901		158.00
		$1,498,621.90

Fund for the Construction of a Storage Reservoir.

December 31st, 1903.

CASH ACCOUNT.

Balance, January 1st, 1903		$4,003.31
Interest on investments	$3,500.00	
Rents, real estate	285.00	
		3,785.00
Total receipts for 1903		$7,783.31
Taxes for 1901 and 1903 on Charlottesburgh, N. J., tract	$327.30	
Fidelity Trust Company—Examination and guaranty of title of Booth property, etc	213.25	
James McCue—Purchase of land	2,600.00	
Total disbursements for 1903		$3,140.55
Balance to credit of account with City Treasurer, Dec. 31st, 1903		$4,647.76

TRIAL BALANCE.

	DR.	CR.
Cash	4,647.76	
Bond Account	50,000.00	
Ivy Hill Property	81,828.40	
Belleville Property	13,965.35	
Charlottesburgh Property	50,670.07	
Storage Reservoir Account		$201,111.58
	$201,111.58	$201,111.58

REAL ESTATE AND SECURITIES.

Registered Newark City Water Bond, No. 28	$50,000.00
Ivy Hill Property, South Orange, N. J.	81,828.40
Belleville, N. J. Property	13,965.35
Charlottesburgh, N. J. Property	50,670.07
	$196,463.82

STATEMENT OF OUTSTANDING WATER BONDS DECEMBER 31st, 1903.

Date of Act	Year of Issue	Title	When due	Rate of Int.	Amount	Rate of Sinking Fund	Yearly Interest	Interest Due	Annual Sinking Fund Payments	Amount in Sinking Fund Nov. 30, 1903
1875	1875-6	Water	1905	7%	$500,000.00	None	$35,000.00	May & Nov.		
1876	1877	"	1906	7%	50,000.00	"	3,500.00	Feb. & Aug.		
1876	1879	"	1909	5%	100,000.00	"	5,000.00	May & Nov		
1884	Oct. 1, 1884	"	1914	4%	30,000.00	3% City Pays	1,200.00	April & Oct.		$ 24,892.70
1884	Feb. 1, 1885	"	1915	4½%	200,000.00	3% "	9,000.00	Feb. & Aug.		151,096.04
1884	Oct. 31, 1885	"	1915	4½%	15,000.00	3% "	675.00	May & Nov		11,343.26
1884	Aug. 1, 1886	"	1916	4%	12,000.00	3% "	480.00	Feb. & Aug.		8,179.89
1884	April 1, 1887	"	1917	4%	15,000.00	3% "	600.00	April & Oct.		9,432 66
1884	Mar. 1, 1888	"	1918	4½%	20,000.00	3% "	900.00	Mar. & Sep.		11,570.30
1888	Dec. 29, 1888	"	1908	4%	20,000.00	3% "	800.00	Tax Levy		12,229.85
1888	Dec. 30, 1890	"	1910	4%	20,000.00	3% "	800.00	"		10,237.49
1888	Sep. 15, 1891	"	1911	5%	70,000.00	3% "	3,500.00	"		30,484.57
1888	Oct. 10, 1892	"	1912	4%	20,000.00	3% "	800.00	"		7,834.00
1888	Nov. 15, 1893	"	1913	4%	55,000.00	3% "	2,200.00	"		19,423.22
1888	Aug 21, 1895	"	1915	4%	40,000.00	3% "	1,600.00	"		10,776.18
1888	Oct. 20, 1896	"	1916	4%	40,000.00	3% "	1,600.00	"		9,267.19
1889	Feb. 1, 1892	Fund-d Water Debt	1922	4%	2,450,000.00	2% Water D't	98,000.00	Feb. & Aug.	$49,000.00	639,776.08
1889	May 1, 1892	New Water Supply	1922	4%	4,000,000.00	2% "	160,000.00	May & Nov.	80,000.00	1,169,040.34
1889	Nov. 1, 1900	"	1922	4%	2,000,000.00	2% "	80,000.00	"	40,000.00	
1889	Aug. 1, 1897	Funded Water Debt	1927	4%	100,000.00	2% "	4,000.00	Feb & Aug	2,000.00	13,019.13
1898	Oct. 12, 1899	Water	1919	4%	20,000.00	3% "	800.00	"	6,000.00	2,522.82
1898	Aug. 1, 1900	"	1920	4%	20,000.00	3% "	800.00	April & Oct	6,000.00	1,867.62
1898	Sept. 1, 1901	"	1921	4%	20,000.00	3% "	800.00	Mar. & Sep.	6,000.00	1,223.91
1898	Oct. 1, 1902	Street Main Extension	1922	4%	30,000.00	3% "	1,200.00	April & Oct.	9,000.00	900.00
1898	July, 1903	"	1923	4%	30,000.00	3% "	1,200.00	Jan. & July	9,000.00	450.00
					$9,877,000.00		$414,455.00		$174,600.00	$2,145,567.25

The Water Department pays both Interest and Sinking Fund on Bonds issued under Acts of 1889 and 1898 and the Interest on Bonds issued under the Acts of 1875-76 and 1884. These payments amounted to a total fixed charge for the year 1903 of $577,155.00.

The Water Department does not pay Interest or Sinking Fund on Bonds issued under the Act of 1888, nor Sinking Fund on Bonds issued under the Act of 1884. These payments are made from the tax levy and amount to $20,000.00 per year.

IN MEMORIAM.

ON July 18th, 1903, MR. GEORGE M. VAN NAME, Cashier of the Water Department, died after a brief illness

The Board of Street and Water Commissioners, at a special meeting adopted the following minute:

"Whereas, it has pleased Almighty God in His inscrutable wisdom, to suddenly remove from our midst, MR. GEORGE M. VAN NAME, who has been connected with the Board in the capacity of a clerk from 1894 to 1899, and as cashier in the Water Department from June, 1899, and

"Whereas, the Board of Street and Water Commissioners desires to publicly testify to the personal worth and valuable services of one who devoted his entire energies to keep pace with the increasing demands of the work of the Department with which he was connected,

"Therefore, be it resolved, that this preamble and resolution be spread upon the minutes of the Board, and that the clerk of the Board be instructed to convey our heartfelt sympathies to his bereaved mother in this hour of direful affliction, and that a copy of these resolutions be sent to her and also published in the daily papers; and that this Board will attend the funeral in a body."

The Board also directed that the office of the Water Department be closed on Tuesday, July 21st, 1903, after one o'clock P. M., the day of the funeral in respect of Mr. Van Name, which motion was adopted.

ANNUAL REPORT

OF THE

General Superintendent of Works.

REPORT OF

General Superintendent of Works.

To the Board of Street and Water Commissioners of the City of Newark.

Gentlemen—In this my ninth annual report, I will take the opportunity of stating that a great deal more work, in cleaning and repairing the streets, has been done during the year, than in previous years; with the increased appropriation of $135,000.00, the greatest economy has been practised to make it go as far as possible, there is a balance on hand of $317.30. The increase in the mileage of paved streets, during the year was 9.90 miles, making a total, to date, of 147.56 miles, divided as follows: Asphalt, 51.10 miles; brick, 9.78 miles; granite and trap rock, 59.52 miles; cobble, 10.44 miles; telford, 16.09 miles; bithulitic, 0.63 miles.

Other expenses, outside of the repairing of pavements and the cleaning of streets, have not been materially increased, but in street repairs and cleaning considerable more money has been spent, as the tables which appear in this report will show.

During the year a building containing a blacksmith shop upon the ground and a carpenter shop upon the second floor, was erected in the stable yard; the blacksmith shop will not be operated until January or February. This shop will greatly facilitate matters and save time in making repairs and horse shoeing.

The city stable has been very fortunate during the year, not a horse having died; there are fifty-two horses stabled, including draft and carriage horses, belonging to the departments.

The expenses of the stable were as follows:

Provender, straw, bran, &c.	$8,585.82
Drugs	183.38
Veterinary	18.00
Electric and gas lighting, stable and yard	428.36
Coal	218.88
Plumbing	71.95
Telephone	50.30
Water	100.00
Rubber boots	3.50
Axle grease	18.60
Fire insurance	112.72
Pay roll	5,731.75
Total expenses of the city stable	$15,523.26

During the year 1903, repairs have been made to forty-seven of the sixty-three streets paved with asphalt, where the guarantee of the contractors, to keep them in repair, has expired.

The cost of keeping in repair North Broad street was $350.00; Orchard street, $250.00. North Canal street, although a very short street, cost $150.00.

By collecting the old asphalt when making openings in asphalt streets, I have been able to make the necessary repairs without using but little new asphalt of which we have quite a quantity on hand.

Another and larger asphalt repair wagon was purchased and put in operation last spring and has proved serviceable.

The cost for repairs to the fire wagons during the year was $345.42.

ASPHALT PAVED STREETS.

REPAIRED, 1903.

	TOTAL NO. OF SQ. FT.
Bank street	215.04
Broad street	6,492.30
Bruce street	1,502.35
Barclay street	563.05
Camden street	144.16
Clifton avenue	558.13
Clinton avenue	1,682.00
Clinton street	290.68
Court street	1,705.33
East Park street	644.54
Elm street	591.49
Elizabeth avenue	208.87
Franklin street	8.83
Fulton street	223.00
Gould avenue	1,718.40
Grant street	462.21
Harvey street	67.75
Halsey street	2,431.71
Holland street	103.25
Lafayette street	676.92
Lincoln avenue	23.75
John street	24.06
Miller street	98.50
Newton street	66.38
New street	290.14
North Canal street	1,669.74
North Sixth street	24.50
North Seventh street	2,794.03
Orchard street	3,329.90
Park place	1,086.66
Park street	570.77
Parker street	32.37
Pennington street	431.21
Penn. avenue	3,492.04
Quitman street	6.66
Second street	50.72
Sherman avenue	602.56
Somerset street	88.50
State street	1,156.55
South 7th street	1,394.78

	TOTAL NO. OF SQ. FT.
South 6th street	685.48
South street	363.50
Sixth avenue	653.55
Summer avenue	19.50
Sussex avenue	44.91
South 8th street	55.22
Thomas street	2,570.65
Third street	45.00
Washington street	763.55
Washington place	1,706.96
Walnut street	41.00
William street	56.00
Wright street	1,268.26
Littleton avenue	92.61
Totals	45,890.82

COST OF REPAIRING ASPHALT PAVED STREETS.

BY MONTHS.

January	$ 13.00
February	
March	84.29
April	152.30
May	435.49
June	258.50
July	418.46
August	517.39
September	173.31
October	464.69
November	346.40
December	112.93
Total for labor	$2,976.76

STREETS AND HIGHWAYS.

STREET REPAIRS (EXCLUSIVE OF ASPHALT STREETS).

	GENERAL REPAIRS.	CUT REPAIRS.	TOTAL COST.
January	10	..	$ 92.23
February	6	..	29.78
March	57	31	506.90
April	46	34	637.17
May	81	67	1,024.53
June	72	5	616.91
July	91	22	807.13
August	89	41	868.34
September	62	41	920.95
October	119	27	1,000.09
November	82	27	665.72
December	6	..	81.07
Totals	721	295	$7,250.82

Average cost per Repair $7.14.

I herewith submit to you a report of the scavenger service for the past eight months, ending to-day; in reviewing the work under the new contract, which went into operation, in part, May 1st last, the disposal plant, which was a necessary adjunct in carrying out the terms of the contract, was not completed until June 1st, at which time the full specifications of the contract were complied with.

Not only for the decided advance but also for the fact that we are working under a new system for the collection of ashes and the disposal of garbage in this city.

The improvement is one which should have been made long ago; with the lapse of time and the growth of the city, in certain districts, it is a matter which requires much study and labor.

It is a general improvement and I have reason to believe that the citizens will join with the city authorities to make it a decided success.

It is a matter for congratulation to observe that we have had but eighty complaints, against two hundred and thirty-two for the same period the previous year, under the old system, which was inaugurated ten years before.

Notwithstanding we have but seven inspectors to look after an estimate of 60,000 families, which without the co-operation of the citizens and the contractor, a proper enforcement of the rules adopted by the Board, would be impossible.

Herewith I give you the cubic yards of garbage, ashes and rubbish collected since the commencement of the new contract:

May	1,040	tons of	garbage.	23,790	cu. yds. of	ashes,	rubbish,	etc.
June	1,390	"	"	23,365	"	"	"	"
July	1,430	"	"	22,287	"	"	"	"
August	1,690	"	"	22,163	"	"	"	"
Sept.	1,820	"	"	25,149	"	"	"	"
October	1,624	"	"	26,490	"	"	"	"
Nov.	1,080	"	"	27,250	"	"	"	"
Dec.	988	"	"	28,725	"	"	"	"

STREETS AND HIGHWAYS.

WORK DONE DURING 1903.

	CUBIC YARDS DIRT REMOVED.	MILES.	COST.
Block pavements cleaned by machine	40,189	1,084.21	$24,016.15
Block pavements cleaned by hand...	15,581	483.62	17,803.19
Cobble pavements cleaned by hand..	2,879	44.72	3,069.31
Asphalt and brick by hand	15,199	5,150.28	17,400.91
Asphalt and brick by machine.....	64	16.79	107.45
Telford by hand	843	15.23	634.06
Gutters	1,883		2,298.18
Removal of snow	24,936		5,144.14
Miscellaneous	1,398		1,264.85
Dirt streets graded and depressions filled.....	796		1,020.87
Dirt streets graded by machine ...	1,274	.38	1,135.84
Intersections	780		1,704.01
Paper pickers (22,817 bags)			2,091.92

	CUBIC YARDS. DIRT REMOVED.	MILES.	COST.
City dumps			$1,052.02
Laborers for surveyors			455.25
Carpenters and helpers			1,211.25
Special laborers			3,871.78
Special inspectors			205.00
Pavement repairs—			
Cobble, 126			906.79
Block, 909			5,981.47
Brick, 21			164.75
Telford, 6			24.95
Asphalt			3,187.73
Telford repairs—			
South Orange avenue			207.22
Clinton avenue			15.22
Ogden street			280.25
High street			61.61
Riverside avenue			80.36
Austin street			8.66
Central avenue			11.61
Weekly salaries			27,242.54
Total	105,822	6,832.85	$122,659.34

SEWERS AND DRAINAGE.

WORK DONE DURING 1903.

	COST.
Basins cleaned (4187)—7,447 loads	$7,764.74
Sewers cleaned—1,996 loads	7,067.25
Chambers cleaned, Pumping Station—3,489 loads	809.50
Repairs Pumping Station	43.25
Basins repaired	716.80
General repairs	176.65
Examining Sewers and Basins	2,035.00
Ditches cleaned	633.50
Ditches repaired	164.45
Laborers for Surveyors	408.25
Carpenters and helpers	690.75
Miscellaneous	1,081.87
Sumps cleaned	299.25
Removing snow from Basins	265.00
Dredging Peddie Canal	145.70
Weekly salaries	15,372.15

SEWER REPAIRS.

Boyd Street	$369.12
Dickerson Street	4.70
Waverly Avenue	7.75
Walnut Street	50.25
15th Avenue	1.85
Cottage Street	1.60
Montclair Avenue	7.50
Sherman Avenue	37.50
Crawford Street	7.50
Brunswick Street	9.25
Murray Street	23.00
7th Avenue and Garside Street	5.25
Clinton Avenue	7.50
Morton Street	7.75
Oraton Street	51.40
Elizabeth Avenue	38.25
McWhorter Street	4.50
Broad Street	5.25
Academy Street	12.75
High Street	12.35
Quitman Street	13.75
Peddie Street	216.85
2nd Avenue and Wakeman Avenue	26.50
Vanderpool Street	13.50
Rector Street	26.00
Mill Brook	561.04
Summer Avenue	6.25
13th Avenue	17.00
Gully Road	3.25
Main Street	4.25
Elizabeth Street	14.50
Total	$39,742.02

EXPENSES OF THE SEWERAGE PUMPING STATION, BAY AVENUE.

Coal	$4,138.76
Telephone	103.70
Hardware	39.81
Lighting	181.06
Repairs to engines and boilers	620.73
Water	100.00
Oil	70.35
Repairs to building	26.57
Total	$5,280.98

PUBLIC BATHS.

Considerable repairs were made to all three of the public baths during the year. The roof of the Morris avenue bath house was altered to some extent, the Summer avenue and the Walnut street bath houses were painted inside and outside, which they needed badly. The attendance at each house was as follows:

	MALES.	FEMALES.
Summer avenue	36,104	2,688
Walnut street	36,540	6,475
Morris avenue	57,575	5,756
Total	130,219	14,919

The receipts for use of suits, towels and rooms was $606.00.

The houses were opened to the public May 26th and continued open until November 28th.

BRIDGES.

The bridge over the canal at Orange street was practically rebuilt during the year, and if the canal is not abandoned the bridge at River street will have to be rebuilt also, as well as the bridge at the Old Bloomfield road.

The expenditures for material were:

Hardware	$ 16.47
Lumber	743.29
Total	$759.76

Cost of labor will be found elsewhere in this report.

WHARVES.

The city dock, which was in bad repair and had been for years in a bad shape, was thoroughly rebuilt and is now in as good condition as ever. The river in front

was dredged to a sufficient depth. The expense of repairing was as follows:

Advertising for bids	$ 94.10
Rebuilding by contract	3,324.00
Dredging the river by contract	490.00
Services of inspector	199.50
Total	$4,107.60

SIDEWALKS.

This department during the year has undergone important changes, adding greatly to its efficiency, and the beneficial results obtained therefrom make it one of importance in the city's management, from the fact that now all moneys collected from the property for the construction, maintenance or repair of sidewalks is paid in and forms a part of the fund specially set apart for this purpose. Under the present system it is managed by one inspector at a salary of $936.00 per annum, where formerly two were employed at $780.00 each, being a saving of $624.00 in salaries alone, which added to the usual appropriation and the moneys received from properties flagged, has enabled the department to lay extensive lines of new walks and make necessary repairs to those in bad condition.

With the fund placed to the credit of this department, I am pleased to render the following summary, which I trust will meet with your approval.

New walks laid by property owners	118,328 sq. ft.
Old walks relaid by property owners	91,902 "
Cement walks laid by property owners	152,558 "
New walks laid by order of the Board	35,046 "
Old walks relaid by order of the Board	4,000 "
New walks laid by ordinance	17,342 "
Total	420,176 "
New curb set by order of the Board	560 lineal ft.
Old curb reset by order of the Board	282 lineal ft.

CROSSWALKS.

	NO OF NEW WALKS.	NO. OF REPAIRS.	COST.
January	4	..	$175.41
February	5	3	209.47
March	4	47	383.01
April	..	40	327.35
May	8	28	375.40
June	2	14	216.21
July	7	12	255.88
August	8	27	436.15
September	6	23	400.18
October	8	20	511.26
November	5	17	274.46
December	..	..	100.00
Totals	57	231	$3,664.78

Monthly Distribution of Pay Rolls from January 4th to December 27th, 1903.

STREETS AND HIGHWAYS.

	Foremen	Stablemen.	Time Keeper.	Clerk.	Carpenters.	Inspectors.	Labor at Stone Yard.	Machinist.	Keeper of Tools.	Keeper of Harness.	Laborers.	Drivers.	Horse and Wagon Hire.	Street Repairs.	Surveyor's Help.	Sundries	Totals.
January...	$1,146.00	$402.75	$125.00	$123.00	$147.00	$255.00	$60 00	$60.00	$60.00	$75.00	$3,994.63	$841.31	$371.54	$92.23	$20.25	$30.30	$7,804.01
February..	936.00	311.00	100.00	100.00	93.00	204.00	48.00	48.00	48 00	60 00	4,504.57	836 67	1,262.54	29.78	13.00	102 30	8,696.86
March.....	990.00	311.00	100.00	100.00	72 00	204.00	48.00	48.00	48.00	60.00	5,075 20	899.92	1,108.72	506.99	42.88	37.50	9,652.21
April.....	963 00	311.00	100.00	100.00	120.00	216 00	48 00	48 00	48 00	60.00	3,535.42	733 08	1,149.08	720.27	28.00	32.50	8,212.35
May.....	1,206.00	388.75	125.00	125.00	117.00	273.00	60 00	60 00	60.00	75.00	6,401.35	1,274.40	2,257.12	1,460.02	44.00	142 11	14,068 75
June.....	1,008 00	311.00	100.00	100.00	63 00	228.00	48 00	48.00	48.00	60.00	3,596.16	720.29	789.63	882.65	36.00	47.25	8,085 98
July.....	1,008.00	311.00	100.00	100.00	84 00	228.00	48.00	48.00	48.00	60.00	5,280 25	959 21	1,601.31	1,246.64	57.00		11,179.41
August....	1,255.29	388.75	125.00	125 00	90.00	357.00	60.00	60.00	60 00	75.00	5 484.33	995.29	1 382 60	1,412.66	61.00	10.50	11,942.42
September.	1,074 00	311.00	100.00	100.00	72 00	300.00	48.00	48.00	48 00	60.00	5,605.52	905.85	1,712.17	1,129.76	50 00		11,564.30
October....	1,350.00	388.75	125.00	125 00	93.00	375.00	60.00	60.00	60.00	75 00	7,482 37	1,167.10	2.579.44	1 571.93	37.00	28.00	15,577 59
November.	1,038.00	311.00	100.00	100.00	72.00	317.25	48.00	48.00	48.00	60.00	3,856.99	622 72	802 73	1,011.92	34 00	18.00	8,488.61
December.	1,260.00	379.75	125.00	125.00	148.50	461.25	60.00	60.00	60 00	75.00	3,523.82	716.73	152 94	215.86	23.00		7,386.85
	$13 234 29	$4,125.75	$1.325.00	$1.323.00	$1,171.50	$3,418.50	$636.00	$636.00	$636.00	$795.00	$58,340.61	$10.672 57	$15,169.82	$10 280.71	$446 13	$448.46	$122,659.34

Monthly Distribution of Pay Rolls from January 4th to December 27th, 1903.

SEWERS AND DRAINAGE.

	Foremen.	Engineers at Pumping Station.	Firemen at Pumping Station.	Laborers at Pumping Station.	Gate Tender.	Inspector of Taps.	Clerk.	Laborers on Sewers.	Drivers on Sewers.	Laborers on Basins.	Drivers on Basins.	Laborers' Detail.	General Repairs.	Sewer Repairs.	Inspectors.	Misc'llaneous Labor.	Carpenters.	Surveyor's Help.	Sundries.	Totals.
January...	$270.00	$279.30	$262.50	$140.00	$75.00	$205 35	$115.00	$485.89	$101.50	$329.86	$89.00	$172.30	$36 50	$235 70	$90.00	$50.00	$21 00	$30.00	$40.19	$3,129.09
February..	216.00	223 44	160.00	112.00	60 00	164.28	92 00	269 25	42 25	380.96	87.50	121.65	92.05	235 20	72 00	40 00	36.00	10 00		2,464 58
March.....	216 00	223.44	210 00	112 00	60 00	164 28	92 00	563.40	66.25	609 72	218.50	160.75	143.75	305.90	72.00	40.00	54.00	29.75		3 341.74
April.....	216.00	223 44	210.00	112.00	60.00	164.28	92 00	660.25	91 50	433.03	154.00	193.00	229.05	32 07	72 00	40.00	18 00	39.00	6.75	3,046 37
May.....	270.00	279 30	262 50	140 00	75 00	205.35	115 00	1.041 50	164.75	652.32	232.50	219.80	145.70	90.00	90.00	50 00		59 00		4,092 72
June.....	216 00	223.44	210 00	112.00	60.00	164.28	92 00	505 75	107.00	393.76	135.50	174.10	161.40	93.65	72.00	40.00	45.00	30.00		2,835 88
July.....	216 00	223.44	210.00	112 00	60.00	164.28	92.00	741.25	93 75	520.01	185 00	156 25	191.22	40.35	72 00	40.00	48.00	31.00		3,196.55
August....	270.00	279 30	262 50	140.00	75.00	205 35	115.00	982.25	175 25	719 56	238 50	194.00	232.90	62.55	90.00	50 00	94.50	46.25		4,232.91
September.	216 00	223 44	210.00	112.00	60 00	164 28	92.00	713 50	120.00	527.28	187.50	141.55	80.95	202 60	72.00	40.00	79.50	25 00	44.65	3,312.25
October....	270.00	279 30	262.50	140 00	75.00	205 35	115 00	1.058.68	122.25	718.00	257.00	201.60	40.10	422.85			154.50	41.25		4,363.38
November.	216 00	223.44	210.00	112 00	60.00	164 28	92 00	608 50	98 50	487.39	134.25	117.25	170.76	209.94		13 00	69.25	22.00		3,008.56
December..	270.00	279.30	262 50	140.00	75.00	205 71	115.00	562.25	54.75	246 48	88.25	103.25	131.75	18.75		34.75	53.00	30.75	46.50	2,717.99
	$2.862 00	$2.960.58	$2,732.50	$1.484 00	$795.00	$2,177 07	$1.219 00	$8,192 47	$1,237.75	$6,018.37	$2,007.50	$1,955.50	$1,656.13	$2,049.56	$702.00	$437 75	$672.75	$394.00	$138 09	$39,742.02

Distribution of Pay Rolls, 1904.

CROSS WALKS.

	Supt.	Laborers.	Drivers.	Sundries	Totals.
January	$100.00	$56.08	$16.33	$3.00	$175.41
February	80.00	108.08	21.39		209.47
March	80.00	256.73	46.28		383.01
April	80.00	197.94	44.16	5.25	327.35
May	100.00	206.17	69.23		375.40
June	80.00	99.87	36.34		216.21
July	80.00	149.89	25.99		255.88
August	100.00	285.32	50.83		436.15
September	80.00	277.86	42.32		400.18
October	100.00	347.09	64.17		511.26
November	80.00	156.05	38.41		274.46
December	100.00	..			100.00
Totals	$1,060.00	$2,141.08	$455.45	$8.25	$3 664.78

PUBLIC GROUNDS.

	Supt.	Laborers	Drivers.	Painter.	Carpenter.	Totals.
January	$90.00	$126.87	$5.52			$222.39
Febru'ry	72.00	148.88				220.88
March	72.00	173 76				245 76
April	72.00	227.05	11.50			310.55
May	90.00	409.16	72.29	10 00	15.00	596.45
June	72.00	282.68	7 84		12.00	374.52
July	72.00	261 88	5.98			339.86
August	90.00	323.20	49.22			462.42
Sept	72.00	269.48	48 76			390 24
Oct	90.00	325.88	60 72		20.00	476.60
Nov	72.00	191.08	36 34			319.42
Dec	90.00	83.70	3.91			177.61
	$954.00	$2,823.62	$302.08	$10.00	$47.00	$4,136.70

PUBLIC BATHS.

	Supt.	Asst. Supt.	Engineers.	Matrons.	Sundries.	Totals.
January.						
Febru'ry						
March...						
April....						
May	$72.00	$60.00	$60.00	$12.00	$3.00	$207.00
June....	216.00	180.00	180.00	48.00		624.00
July. ...	216.00	180.00	180 00	48.00	6.00	630 00
August..	297.00	247.50	247.50	60.00		852.00
Sept.. ..	220.50	183.75	183 75	48.00		636.00
Oct.....	270.00	225.00	225.00	60.00		780.00
Nov.....	216 00	180.00	180.00	48.00		624.00
Dec.....	18.00	15.00	15.00			48.00
	$1,525.50	$1,271.25	$1,271.25	$324.00	$9 00	$4,401.00

BRIDGES.

	Carpenter.	Laborers.	Totals.
January.....	$7.50	$4.25	$11.75
February.....	15.00	11.50	26.50
March.....			
April.....	3.00		3.00
May	54.00	109.50	163.50
June.....	15.00	13.75	28.75
July.....	6.00	4.50	10.50
August.....			
September.			
October.....	75.75		75.75
November....	3.00	1.00	4.00
December.....			
	$179.25	$144.50	$323.75

SIDEWALKS.

	Inspector.	Clerk.	Totals.
January	$75.00	$87.00	$162.00
February	60.00	72.00	132.00
March	60.00	72.00	132.00
April	60.00	72.00	132.00
May	75.00	90.00	165.00
June	60.00	72.00	132.00
July	60.00	72.00	132.00
August	15.00	90.00	105.00
September		72.00	72.00
October		90.00	90.00
November		72.00	72.00
December		90.00	90.00
	$465.00	$951.00	$1,416.00

CARPENTER—1903.

STREETS AND HIGHWAYS.

NATURE OF WORK.	TOTALS.
General Jobbing	$607.00
City Hall Office	3.00
Construction of Blacksmith Shop at City Stables	180.00
City Stables Repairs	280.75
Repairs Stables Market Street Office	6.00
Repairs Drain at Gully Road	69.75
New Shed Drain Peddie Street Lock	25.00
Total	$1,171.50

SEWERS AND DRAINAGE.

General Jobbing	$207.00
Repairs Market Street Office	32.00
Repairs City Stables	207.00
Repairs Drain, Gully Road	170.75
Repairs City Hall Office	3.00
Construction of Blacksmith Shop at City Stables	53.00
Total	$672.75

BRIDGES.

	TOTALS.
Warren Street Bridge	$8.00
Halsey Street Bridge	22.50
Hamburg Place Bridge	11.25
Washington Street Bridge	12.25
Wright Street Bridge	55.75
River Street Bridge	114.50
Mulberry Street Bridge	39.25
Elizabeth Avenue Bridge	53.25
Sundries	7.00
Total	$323.75

PUBLIC GROUNDS.

Repairs, benches, tools, etc	$47.00

J. C. MUNDY,
General Superintendent of Works.

REPORT OF

ENGINEER OF DEPARTMENT OF STREETS AND HIGHWAYS.

To the Honorable the Board of Street and Water Commissioners:

GENTLEMEN—The following report for the year ending December 31, 1903, is herewith respectfully submitted, showing the street and highway improvements, and other work done under the direction and supervision of this department. This report would be my eighteenth, if they had been regularly submitted.

For the purpose of comparison and statistical information, I have also embodied the work performed in the years 1900, 1901 and 1902, as the last official report rendered was for 1899. The public improvements made under the Department of Sewers and Drainage for the same years, which was also under my charge until March 1, 1903, will be found in the report of my successor to that department.

STREET IMPROVEMENTS.

PAVING AND REPAVING.

Thirty-five contracts were awarded during the year, comprising sixteen for brick, thirteen for granite, three for Warren Bros. Bitulithic, one for Telford, and one for Creo-Resinate Wood-Block pavement.

Twenty-nine of the contracts were completed; one for granite, three for brick, one for Bitulithic, and the one for Wood-Block remain unfinished, on account of the delay, on part of the contractors in procuring the materials and the

severity of the weather. In addition thereto three Granite-Block pavements were also completed during the year, which had been awarded in 1902.

The following shows the amount of work actually done during 1903, and the cost thereof as per contracts:

	Miles.	Sq. Yds.	Cost.
Granite	5.475	92,541	$265,159.14
Brick	3.635	69,086	154,187.01
Bitulithic	0.63	13,152	33,833.86
Asphalt	0.075	1,432	3,197.46
Telford	0.075	1,154	2,462.76
Total	9.89	177,365	$458,840.23

ALL WORK CONTRACTED FOR:

	Miles.	Sq. Yds.	Cost.
Granite	5.595	95,141	$272,160.14
Brick	4.435	84,946	193,591.01
Bitulithic	1.48	30 652	83,592.86
Wood-block	0.08	1,300	5,731.10
Asphalt	0.075	1,432	3,197.46
Telford	0.075	1,154	2,462.76
Total	11.74	214,625	$560,735.33

The following schedule shows the amount of street paving completed in each of the past four (4) years, and the cost of the same as per contracts:

KINDS OF PAVEMENT.

1900

	Granite Blocks.	Brick.	Sheet Asphalt.	Telford.	Bitulithic.	Total.
Miles	0.12	0.09	12.37			12.58
Sq. yds	2.411	1,483	247,226			251,120
Cost	$5,732.90	$3,293.39	$551,369.31			$560.395.60

1901

Miles	3.28	0.60	5.71	0.75		10.34
Sq. yds	64,645	14,374	111,409	11,534		201,962
Cost	$141,175.72	$35,672.11	$228,966.50	$21,621.80		$427,436.32

1902.

	Granite Block.	Brick.	Sheet Asphalt.	Telford.	Bitulithic.	Total.
Miles.....	4.52	1.70	3 77	2.39		12 38
Sq. yds...	83,660	37,525	69,138	40,033		230,356
Cost.....	$187,809.96	$84,571.15	$151,284.58	$68,210 85		$491,876.54

1903.

Miles	5.475	3.635	0.075	0.075	0.63	9.89
Sq. yds...	92,541	69 086	1,432	1,154	13,152	177,365
Cost.....	$265,150.14	$154,187.01	$3,197.46	$3,462 76	$33,833.86	$459,840.23

1900-1903 (Inclusive).

Miles.....	13.395	6.025	21.925	3.215	0.63	45.19
Sq. yds...	243,257	124,468	429,205	52,721	13,152	860,803
Cost.....	$599,877.72	$277,723 66	$934,817 85	$93,295.60	$33,833.86	$1,939,548.69

Tables No. 1, 2, 3, and 4 present a more itemized statement of the pavements constructed during the years 1901-1904.

COST OF STREET PAVEMENTS AND AMOUNT PAID TO INSPECTORS.

Year.	Pavements.	Inspection.	Increased Cost per Sq. Yd.	Per Cent. of Total Cost.
1900.....	$560,395.60	$8,370.25	0.033	1.5
1901.....	427,436.32	8,722.90	0.043	2.0
1902.....	491,876.54	7,530.41	0.032	1.5
1903.....	458,840.23	8,727.77	0.047	1.9

AVERAGE PRICE PAID PER SQUARE YARD FOR THE DIFFERENT KINDS OF PAVEMENTS.

	1900.	1901.	1902.	1903.
Granite, oblong-block, on concrete	$2.73	$2 63	$2.78	$3.15
" " " " sand..	1.85	1.78	1.96⅖	2.23½
Brick, cement filler.....		2.33	2 04	2 12
" sand filler.....	1.95	2.25	1.96	1.99
Sheet asphalt.....	2.11⅖	1.84	1.90⅖	1.97
Telford, 10 inch thick.....		0.97	0.97	0.99
Bitulithic, 8 inch thick.....				2.25
Wood, oblong-block, 4 inch thick.				3 76

THE AVERAGE PRICE PAID, PER LINEAL FOOT, FOR FURNISHING AND SETTING NEW BLUE-STONE CURB, AND RESETTING OLD CURB IS AS FOLLOWS:

	1900	1901	1902	1903
New 20 x 4 inch, coarse-axed, in concrete				0.93
" " " quarry-cut, " "	0.59	0.49	0.59	0.65
" " " " " in sand		0.41	0.37	0.51
" 16 x 4 inch, coarse-axed, in concrete	0.62			0.86
" " " quarry-cut, " "	0.56	0.41	0.50	0.57
" " " " " in sand		0.32	0.35	0.51
Old 20 inch, redressed as axed curb, in concrete				0.65
" " " in concrete		..	0 22	0.42
" 16 inch, " "	0.20	0 13	0.20	0.22

AMOUNT AND COST OF STREET PAVING DONE BY ORDER OF THE BOARD SINCE ITS ORGANIZATION IN 1891.

Pavements.	Miles	Lineal Feet.	Sq Yds.	Cost.
Asphalt	50.455	266,403	1,020,746	$2,379,294.99
Granite	37.855	199,874	691,665	1,752,168 70
Brick	9.785	51,665	204,500	467,852.91
Trap-rock	8.490	44,827	154,167	345,712.26
Telford	4.735	25,001	67,032	102,423.45
Cobble	0.720	3,802	13 496	16,843.14
Bitulithic	0.630	3,326	13,152	33,833.86
Total	$112.670	594,898	2,164,758	$5,098,129.31

The net increase in the pavements, from 1891 to 1904, is 96.52 miles. Table No. 5 shows the increase and decrease in the different kinds of pavement, in each year, for the same period.

NUMBER OF MILES OF DIFFERENT KINDS OF STREET PAVEMENT ON JANUARY 1, 1904.

Granite Block	47.235
Trap-Rock Block	12.290
Telford	19.065
Asphalt	51.095
Brick	9.785
Cobble-Stone	10.440
Bitulithic	0.630
Total	150.540

Including 6.46 miles of Telford pavement, which was laid by the county and is maintained by it; lying in Frelinghuysen, Central, Park and Bloomfield avenues.

Table No. 6 gives a list of all asphalt pavements, by whom laid, number of years guaranteed, when the guarantee expires, etc.

All asphalt pavement which was laid under a five-year guarantee only, is now in charge of the city, amounting to 423,213 square yards; that which was laid under a ten-year guarantee amounts to 611,193 square yards. The limitation of guarantee and the amounts to be paid the contractor per square yard per year during the second period of years, are as follows:

SQUARE YDS.	EXPIRATION.	PRICE PER YD.
152,147	1908	5 cents.
11,639	1909	5 "
14,554	1910	5 "
250,664	1910	2½ "
111,409	1911	2½ "
69,138	1912	2½ "
1,432	1913	2½ "

SCHEDULE SHOWING THE AMOUNT DUE FOR MAINTENANCE DURING THE TIME OF GUARANTEE.

Year.	Sq. Yds.	Price Per Sq. Yard Per Year.	Cost	Sq. Yds.	Price Per Sq. Yard Per Year.	Cost.	Total Cost.
1904.....	152,147	5 cents.	$7,607.35				$ 7,607.35
1905.....	163,786	"	8,189 30				8,189.30
1906.....	178,340	"	8,917.00	250,664	2½ cents.	$ 6,266.60	15,183.60
1907.....	178,340	"	8,917.00	362 073	"	9,051.84	17,968.84
1908.....	178,340	"	8,917.00	436,020	"	10 900.51	19,817.51
1909.....	26,193	"	1,309 65	437.452	"	10,936.32	12.245.97
1910.....	14,554	"	727 70	437,452	"	10,936.32	11,664.02
1911.....				186,788	"	4,669.71	4,669.71
1912.....				75,379	"	1,884.48	1.884 48
1913.....				1,432	"	35.80	35.80

The whole of the asphalt wearing surface in James street, from Washington street to Burnet street, and in Park place, from Rector street for a distance of 310 feet south of same, was taken up and a new asphalt covering laid on a binder course, in 1902. In both streets the original asphalt pavement was laid in 1890, and the wearing surface on a cushion coat; under a guarantee of five years. The softness of the wearing surface, laid in James street, made it roll or bunch more than in any other street where a mere cusion coat was used; the great unevenness in the surface and the large expense to the city for keeping it in repair, after the expiration of the five-year guarantee, caused the city to resurface it. The price paid in James street was $1.53 and in Park place $1.49 per square yard, under a ten-year guarantee, but allowing the contractor an additional sum of 12½ cents for maintenance during the second period of 5 years; there were quite a number of small repairs made in several other streets, at the same time and by the same contractor, the whole work covering 5,824 square yards at a cost of $9,572.19.

For more itemized statement of these repairs, see table No. 8.

In the year 1900, when the additional sum of 25 cents per square yard was reduced to one-half, for the maintenance of asphalt pavements during the second period of the ten-year guarantee, some contractors considered it impossi-

ble to maintain the pavements for such an amount. The reduction was based upon a compilation made by me from an annual report of the Engineer Commission of Washington, D. C. In the annual report for 1902 of the Engineer of the City of Rochester, N. Y., I found a tabulated statement, which shows, in one instance, that the asphalt pavement in ten streets, containing 52,075 square yards, was maintained during an average period of ten years, following the expiration of a five-year guarantee, at an average cost of $0.0225 per square yard, per year.

As the city now has two asphalt repair wagons, it would be well to keep an itemized account of expenses for repair in each street, in order to ascertain the cost per square yard per year for maintenance; this is also applicable to brick and all other pavements when maintained by the city. It is and will be valuable statistics.

As to Warren Bros.' Bitulithic Pavement, for which contracts were awarded by the city during 1903, amounting to about 31,000 square yards, with an addition of about 8,000 square yards in the street railway tracks in one of the streets to be paved by the city, I cannot add anything to what I have said in my treatise of the pavements in Newark, presented at the annual convention held in Indianapolis, Ind., by the American Society of Municipal Improvements, which treatise was almost entirely published in some of the local papers.

In my opinion its durability is dependent in a great measure upon the lasting qualities of the bitumen, as is the case with all other kinds of pavements containing bituminous material. I also take the view that nothing can excel a concrete foundation for stability, under any pavement with a wearing surface of moderate thickness; especially when the ground has been disturbed by digging numerous trenches, almost immediately before the pavement is laid.

Although the results obtained from a few brick pavements, which were laid during the last few years, are not satisfactory, yet most of them are in a good condition, and

have cost the contractors but little to maintain them during the five-year guarantee, and but a small sum to the city since the expiration of the guarantee.

Of course a cement grout filler in the joints will preserve the edges of the brick much longer than when filled with sand, but on the other hand the rumbling noise in the first instance cannot be entirely overcome. It was my opinion that when cement is used the durability of a brick pavement would be extended for five years, in which I was supported by an Engineer who had published a book on street pavements.

It is the fire-clay brick or block which has given the most trouble, and yet an engineer of one of the larger cities said that in his place the fire-clay brick stand in higher favor than shale-brick; amounting almost to an exclusion of the latter.

Taking it in all its phases, the laying of a brick pavement and obtaining satisfactory results, is connected with as many difficulties or intricacies as with laying bituminous pavements.,

It is quite an important factor in laying a brick pavement, especially when a cement grout filler is used, that the work should be done in warm weather or during the summer months, as the brick then will obtain in a measure their greatest expansion before being laid, causing less danger of the irksome noise thereafter.

It is the same with bituminous pavements, when laid in seasonable weather, as there will be no lumping of the bituminous mixture by being chilled, or possibly an overheating and a consequent loss of viscosity of the bitumen.

Generally such pavements ought not to be laid after the first day of December or even November. Some time ago an engineer in one of the Western cities specified that asphalt shall not be laid when the temperature of the weather was below forty degrees.

Table No. 7 gives a list of all brick pavements, by whom laid, etc., similar to the one showing a list of the asphalt pavements.

GRADING, CURBING AND FLAGGING.

Five contracts were awarded and completed during the year for improvements of this character; the aggregate length is 2,570 feet, and the cost $10,406.25. In the three previous years eight contracts were executed for like improvements, the aggregate length being 10,800 feet and the cost $37,142.31, including the improvements of Arlington avenue, containing a series of steps.

The following schedule shows the amount of work done, and the cost as per contracts:

Year.	Length.	Curb Lin. ft.	Cross-Walks Sq. ft.	Flagging Sq. feet.	Cost.
1900	5,860	8,521	1,375	10,960	$10,379.98
1901	880	1,840	448	7,404	2,528.38
1902	3,560	6,130	457	25 340	9,652.16
1903	2,570	4,604	2,108	18,410	10,406.25
Total	12,870	21,095	4,388	62,114	$32,966.77

This schedule does not include the Arlington avenue improvement. For an itemized statement of this, in addition to the others, see table No. 8.

In connection with the abolishment of the grade crossings of some of the steam railroad companies, the sum of $6,064.87 was expended in 1902, for the lowering of a part of Mulberry street and Hamilton street, and for raising a part of Lafayette street. During the year 1903, the contract for lowering a part of Ogden street, and another for lowering a part of High Street and parts of Morris and Essex Railroad avenue, were awarded. The work on Ogden street is almost completed; on the other depressions work has not been commenced.

The amount expended during the year for street improvements under contract and completed, as per Engineer's estimates, was $470,247.00, and the three years previous, $1,522,081.06; or a total of nearly two million dollars in the past four years.

There was also a contract awarded, late in 1903, for lay-

ing a concrete walk along the easterly side of Military Park, but the work was postponed until the coming spring.

MISCELLANEOUS.

ELIMINATION OF GRADE CROSSINGS.

The work to be done under the joint contract of the Pennsylvania Railroad Company and the Central Railroad Company of New Jersey, with the City of Newark, in elevating the tracks of the first mentioned company over all streets crossing its line within the city limits, and the tracks of the other company over Mulberry street, was practically completed at the close of the year; only the inclemency of the weather prevented its completion.

The joint contract is dated January 8, 1901.

The work of the Central Railroad was to be commenced within sixty days from the passage of the ordinances, on the part of the city, necessary for authorizing said company to construct the work, and was to be completed within one year.

The work was commenced July 6, 1901, and practically completed May 12, 1903. The length of elevation is 2,830 feet, beginning in the Broad Street Station and extending to the bridge across Ferry street. The tracks at Mulberry street were raised 8 feet above their former elevation and the street depressed 6 feet 2 inches; the clearance under the bridge is 12 feet 9½ inches.

The work of the Pennsylvania Railroad was also to be commenced within sixty days from the passage of the necessary ordinances, and was to be completed within one year from the date of completion of the work to be done by the Central Railroad Company.

Excavation for erecting the retaining walls was commenced April 15, 1901. In July of 1902, the westerly half of the elevated structure south of Hamilton street, was opened for train service; on April 13, 1903, the Market

street grade crossing was abandoned; and on October 11, 1903, all crossings were completely abolished.

The length of elevation within the city limits is 11,330 feet, extending from a point 290 feet north of Peddie street canal to the centre of Passaic River, and 4,370 feet in the Town of Harrison, making a total of 15,700 feet of elevation.

Within the city are twenty streets now crossing under the elevated tracks; one street crossing was abandoned; and a tunnel, for pedestrians only, substituted for another. The maximum underclearance is 14 feet 10 inches and the minimum 12 feet; the underclearance at Market street is 13 feet 3 inches on the westerly side of the bridge and 13 feet 8 inches on the easterly side, along the street railway tracks. The tracks were raised an average of 14 feet 3 inches between Vanderpool street and the Passaic River, a distance of 8,200 feet.

The work to be done under the contract between the City of Newark and the Delaware, Lackawanna and Western Railroad Company, is continuing satisfactorily. It is divided into three sections: the first extending from the draw-span in the Passaic River to a point 200 feet east of Boyden street, a distance of 2,570 feet; the second section extending to a point 50 feet east of the easterly line of Third street, 3,670 feet; and the third section extending to the city line, measuring 3,140 feet; the latter section also includes the Montclair Branch, a distance of 2,780 feet from its junction with the main to the city line, making a total of 12,160 feet within the boundaries of the city.

The first section is elevated, and the other two sections are to be depressed or partially so; there are four underhead crossings of streets in the first section; there will be five overhead crossings of streets in the second; on the main line of the third section there will be seven overhead and one grade crossing, also three overhead foot bridges, and on the Montclair Branch there will be four overhead bridges for streets.

The underclearance at Broad street bridge is 18 feet, and the height of the tracks is 20 feet 7 inches. The minimum underclearance of the overhead roadway bridges is to be 16 feet 6 inches, the maximum will be 20 feet, and the average depth of depression on the second and third sections, between Nesbitt street and Bathgate place, a distance of 4,226 feet, will be 19 feet 6 inches; at North 14th street the depression will be only 5 feet and consequently the grade crossing will remain.

The contract provides that the work of track elevation and depression shall begin within thirty days after the execution and delivery of the contract; the first section shall be completed within two years thereafter. Work on the first section was commenced in March, 1902, and on December 20, 1903, trains were run over the elevation of section No. 1. The middle or second section is to be completed within three years after the execution of the contract, provided that the Morris Canal is abandoned as a waterway during the year 1902; if not then abandoned, the companies shall have one year from the first of January following the date of abandonment; but little work is done on this section. Section three, including the Montclair Branch, is to be fully completed within three years from the date of the execution of the contract; the amount of work done at the end of this year represents about sixty per cent. of the entire cost.

It will be remembered that in March, 1902, I prepared and submitted a report treating upon the collection and disposal of garbage, ashes, etc., which was accompanied with a tabulated statement showing the estimated population and quantity of garbage, etc., for each year from June, 1900, to 1912. The population in 1903 was estimated to be 268,500, and the quantity of garbage 16,110 tons; the official statement from the contractor shows a total collection of 11,052 tons during eight months, taking the average of this amount per month for the entire year, gives 16,596 tons.

I was not so close in the estimate of ashes and other refuse; by taking the average per month of the amount

stated, it would give 298,824 cubic yards for the year; the quantity estimated by me was 218,559 cubic yards.

Nevertheless it was not so far from the mark, when it is considered that no city records were available to determine these quantities.

The survey and maps of the Clinton Annexation are completed, and will be submitted to the Board for their attest; this work could only be done now and then during the past few years. In former times when surveys of such magnitude were made, there was a commission appointed to lay out the streets, and a special corps of engineers or surveyors employed by the commissioners to do the work.

I would ask the Board to give me an opportunity to organize a special force of efficient assistants to make a plane and topographical survey of Clinton Annexation No. 2, comprising about 2,100 acres; it will probably take the best part of a year to do this work.

This department is also called upon to make surveys of properties for the Fire and other departments.

I believe the Board realizes how much work was done in this department, especially during the time that all track elevation work was in progress, and while I also was in charge of the Department of Sewers and Drainage.

The staff in the office at the present time is:

Louis C. Dittler, Principal Assistant.

Assistants, { William A. Howell, } Track Elevation Work.
{ Wainwright Ripley, }
{ Charles A. Stilger,
{ Walter W. Kane,
{ David Crabb.

Geo. C. Brandley, Prin. Asst. in Office.
Arthur U. Schiener, Asst. in Office.

Both assistants are in joint service of the Street and Sewer Department.

Respectfully,

ERNEST ADAM,

Engineer of the Department of Streets and Highways.

TABLE C NO. 1—SHOWING STREETS PAVED IN 1900.

	Streets Paved.	Location.	Material.	Length.	Square Yards.	Cost per Sq. Yard.	Final Estimate.	Total Cost per Comptroller.	Assessment on Property	Assessment on City.	Contractor.	Character of Foundation Laid.	Remarks.
1	Bathgate pl.....	Orange st. to Seventh ave.....	Asphalt	439	1,468	1.89	$ 3,307.51	$ 3,707.05	$ 2,873.32	$ 833.73	Barber Asp. Co...	Concrete	
2	Broome st.....	Waverly ave. to W. Kinney st.....	"	1,819	6,530	1.90	13,872.08	14,574.65	12,777.11	1,797.54	" "	"	
3	Burnet st.....	Central ave. to Orange st.....	"	662	2,118	1.95	4,932.63	10,665.05	9,228.05	1,437.00	" "	"	
4	Charlton st.....	Waverly ave. to Montgomery st...	"	1,442	5,153	1.93	11,329.80	12 001.20	10,435.68	1,565.52	John F. Shanley..	"	
5	Coes pl.....	Baldwin st. to Court st.....	"	523	1,730	1.88	3,674.59	4.082.70	3,444.00	638 70	Barber Asp. Co...	"	
6	Darcy st.....	Hamburg pl. to Magazine st.....	"	1,468	4,947	2.12	11,634.12	12,388 35	9.519.72	2,868.63	" "	"	
7	Dey st.....	Central ave. to Sussex ave.....	"	544	1,782	1.89	3,855.97	4,209.70	3,575.56	634.14	" "	"	Total cost includes paving done in 1898.
8	Elm st.....	Mulberry st. to Pacific st.....	"	1,686	5,726	1.93	12,340.40	31.336.65	27,702.42	3,634.23	John F. Shanley..	"	
9	Fairmount ave...	Fifteenth ave. to Central ave.....	"	4,118	18,367	1.90	38,535.60	39,911.15	31,945.84	7,965.31	Barber Asp. Co...	"	
10	Fillmore st.....	Market st. to Passaic ave.....	"	677	2,194	2.12	5,085.83	5,809.55	4 302.76	1,506.79	" "	"	
11	Fifth st.....	Orange st. to Fifth ave.....	"	2,159	7,229	2.11½	16,968.56	17,878.70	15,454.24	2,424.46	" "	"	
12	Fourth ave.....	Roseville ave. to North 11th st.....	"	602	2,552	2.11½	5,926.89	6,492.25	4.927.81	1,564.44	" "	"	
13	Gray st.....	Warren st. to Seventh ave.....	"	722	2,350	2.11½	5,551.70	6,091.50	4,907.70	1,183.80	" "	"	
14	Green st.....	Broad st. to Liberty st.....	"	1,426	4,703	1.95	11,436.29				" "	"	
15	Green st.....	Liberty st. to N. J. R. R. ave.....	Granite	166	547	2.35	1,643.64	13.877.45	10,990.96	2,877.49	John F. Shanley..	"	Total cost includes paving done in 1899.
16	Hecker st.....	Orange st. to Sussex ave.....	Asphalt	695	2,244	2.12	5.216 65	5,831.20	4,883.20	948.00	Barber Asp. Co...	"	
17	Hunterdon st.....	Springfield ave. to Warren st.....	"	3,050	12,108	1.93	25,554.69	36 806.50	31,691.07	5,115.43	" "	"	
18	Jackson st.....	Market st. to Lafayette st.....	"	1,774	6,248	1.89	13,549.62	14,284.75	11,872.06	2,412.69	" "	"	
19	Livingston st.....	W. Kinney st. to Waverly ave.....	"	1,854	6,029	1.93	13,155.27	14.003.60	11.971.04	2,032.56	John F. Shanley..	"	
20	Marshall st.....	Broad st. to Coes pl.....	"	1,181	3,479	1.88	8,115.04	8 671.10	7.007.55	1.663.55	Barber Asp. Co...	"	
21	Miller st.....	Broad st. to Sherman ave.....	"	415	861	1.89	1,995.42	8,259.10	6 664.00	1,595.10	" "	"	
22	Miller st.....	Sherman ave. to Elizabeth ave.....	Brick	488	1,483	1.95	3,293.39	3.869.65	3,113.72	755.93	F. C. O'Reilly...	"	
23	Morton st.....	High st. to Prince st.....	Asphalt	1,424	5,278	2.12½	13,378.86				Met. Asp. Pav. Co.	"	
24	Morton st.....	Prince st. to Belmont ave.....	Granite	465	1,864	1.85	4,089.26	18,635.40	13.942.20	4,693.20	John F. Shanley..	Sand	
25	Myrtle ave.....	Sussex ave. to Orange st.....	Asphalt	806	2,680	2.12	6,270.22	6,862.30	6,145.85	716.45	Barber Asp. Co...	Concrete	
26	Nichols st.....	Pacific st. to Jefferson st.....	"	612	1,985	1.89	4,145.25	4,477.10	3 857.86	619.24	" "	"	
27	Nutria st.....	Market st. south.....	"	202	210			Private			" "	"	
28	North 6th st.....	Warren st. to Orange st.....	"	1,771	5,403	1.90	11,610.78	12.273.00	10,485.91	1,787.09	" "	"	
29	North 9th st.....	Seventh ave. to Newbold st.....	"	2,920	11,461	1.95	24,453 44	25,517 75	22,029.18	3,488.57	" "	"	
30	North 11th st....	Orange st. to Sixth ave.....	"	1,218	4,676	2.11½	11,075.21	11.820.40	9.336.80	2 483.60	" "	"	
31	North 11th st....	Orange st. to Sixth ave.....	"	2,367	9,413	1.93	20,111.26	20,987.75	17,758.36	3.229.39	John F. Shanley..	"	
32	Quitman st.....	Clinton ave. to W. Kinney st.....	"	1,074	4,295	2.11½	9,930.90	10.653.40	8.696.23	1,957.17	Barber Asp. Co...	"	
33	Ridgewood ave...	Clinton ave. to Bigelow st.....	"	842	2,810	2.11½	6,850.57	7,366.15	6,150.32	1 215.83	" "	"	
34	Second st.....	Orange st. to 230 ft. north 7th ave.	"	3,138	14 416	2.11½	35,492.19	37,089.90	26,957.81	10 132.09	" "	"	
35	Seventh ave.....	First st. to North 14th st.....	"	4,382	17,194	1.88	35,441.66	37,253.85	31,328.31	5,925.54	" "	"	
	South 9th st.....	South Orange ave. to Warren st....											

TABLE C, No. 2—SHOWING STREETS PAVED IN 1901.

	Streets Paved.	Location.	Material.	Length.	Sq. Yds.	Cost per Sq. Yd.	Final Est.	Total Cost per Comptroller.	Assessment on Property	Assessment on City.	Contractor.	Character of Foundation Laid.	Remarks.
1	Blum st.....	Springfield ave. to South Tenth st...	Asphalt	875	2,677	$1.80	$ 5,550.00	$ 6,132.80	$ 4,806.56	$1,326.24	Barber Asp. Co...	Concrete	
2	Brunswick st.....	Pennsylvania ave. to Miller st.....	"	1,150	7 617	1,80	15,019.88	16.186.49	14,144.33	2,042.16	" "	"	
3	Chester ave.....	Summer ave. to Peabody pl.....	"	1,416	5,630	1.92	12,462.03	13,363.30	11,142.45	2,220.85	" "	"	
4	Clayton st.....	West st. to Broome st.....	"	629	1,469	1.85	3,006.00	3,404.70	3,035.85	368.85	" "	"	
5	Fourth st.....	Orange st. to Sixth ave.....	"	1,400	4,596	1.80	9,297.60	10,100.05	9,064.11	1,035.94	" "	"	
6	Garside st.....	Sixth ave. to Seventh ave.....	"	770	3,086	1.92	6,452.29	6,987.45	6,115.13	872.32	" "	"	
7	Gillette pl.....	Broad st. to Sherman ave.....	"	556	2,154	1.92	4,697.82	5,147.30	4,404.66	742.64	" "	"	
8	Halleck st.....	Washington ave. to Summer ave....	"	1,100	4,306	1.80	8,880.22	9,595.20	8 575.48	1,019.72	" "	"	
9	Hampden st.....	Wickliffe st. to Boston st.....	"	315	1,003	1.80	2,012.21	2,564.10	2 025.95	538.15	" "	"	
10	Hunterdon st....	Springfield ave. to Eighteenth ave..	"	1,240	3,866	1.80	7.215.47	7,921.03	6,524.25	1,396.78	" "	"	
11	Milford ave.....	Alpine st. to Elizabeth ave.....	"	1,731	7,181	2.11	16.724.85	17,681.00	12,214.99	5,466.01	" "	"	
12	Milton st.....	Wickliffe st. to Boston st.....	"	315	1,007	1.80	2,085.94	2,532.10	2,086.89	445.21	" "	"	
13	Monroe st.....	Market st. to Elm st.....	"	2,146	7,926	1.80	15.041.46	16,079.15	13,704.41	2,374 74	" "	"	
14	Mt. Prospect ave.	Sixth ave. to Seventh ave.....	"	810	3,288	1.92	7.013.89	7,601.55	6,449.53	1,152.02	" "	"	
15	Orleans st.....	Warren st. to New st.....	"	513	1.626	1.80	3,214.62	3.765.95	3,129.87	636.08	" "	"	
16	Park st.....	Mulberry st. to Cherry st.....	"	465	1,317	1.80	2,753.09	3,206.55	2,911.50	295.05	" "	"	
17	Second st.....	Warren st. to Orange st.....	"	2,230	7,123	1.80	14,033.81	15,063.01	13,443.23	1,619.78	" "	"	
18	South Ninth st...	Sixteenth ave. to S. Orange ave...	"	1,653	6,286	1.80	11,927.78	12,838.35	11,033.84	1.804.51	" "	"	
19	South Tenth st...	S. Orange ave. to Central ave.....	"	3,340	10,289	1.80	19,748.94	20.973.64	18.519.20	2,454.44	" "	"	
20	Summer ave.....	Chester ave. to Verona ave.....	"	4,706	21.807	1.92	45,785.45	47,880.30	41,530.85	6,349.45	" "	"	
21	Third st.....	Central ave. to Orange st.....	"	2,120	5,838	1.92	12,824.04	13,702.50	11,683.51	2,018.99	" "	"	
22	Warren pl.....	Warren st. to New st.....	"	502	1,317	1.92	3,219.11	3,625.75	2,881.37	744.38	" "	"	Private.
23	Library court....	Bank st. and Market st.....	"	150	167								
24	Atlantic st.....	Lombardy st. to Bridge st.....	Ob. Gr. Blk	615	1,984	1.68	3,600.37	4,088.35	3,674.24	414.11	David Harper....	Sand	
25	Chapel st.....	Bowery st. to Lister ave.....	"	1,832	5,000	1.98	10,716.60				J. R'sev'lt Shanley	"	Not completed until 1902.
26	Charlton st.....	Montgomery st. to Springfield ave..	"	1,413	5,234	1.74	9,956.09	10,826.30	9,282.90	1,543.40	" "	"	
27	Chester ave.....	Peabody pl. to Riverside ave.....	"	447	1,894	1.74	3,834.59	4,275.90	3,682.85	593.05	" "	"	
28	Emmet st.....	N. J. R. R. ave. to Avenue C.....	"	1,723	6,870	1.80	13,609.63	14,654.10	11 464.64	3,189.46	" "	"	
29	Hamburg pl.....	Garrison st. to Dresden st.....	"	723	2,360	1.80	5,136.02	5.760.20	4,896.07	864.13	" "	"	
30	Jacob st.....	Springfield ave. to Sixteenth ave....	"	980	2,855	1.82	5,508.94	6,096.75	5,060.58	1,036.17	James Seme.....	"	
31	Kossuth st.....	Hamburg pl. to St. Charles st.....	"	1,460	8,600	1.78	16,662.80	17,975.54	15,082.16	2.883.38	David Harper....	"	
32	Lemon st.....	Sheffield st. to Nesbitt st.....	"	331	1,373	1.74	2,601.69	3,105.95	2,728.26	377.69	J. R'sev'lt Shanley	"	
33	Nassau st.....	High st. to Sheffield st.....	"	800	2.916	1.74	5.409.61	6,053.80	5,096.02	957.78	" "	"	
34	State st.....	High st. to Boyden st.....	"	551	1,953	1.74	3,645.86	4,215.45	3,633.44	582.01	" "	"	
35	Summit pl.....	High st. to Summit st.....	"	329	654	2.55	2,002.17	2,523.35	1.350.55	1,172.80	David Harper....	"	

TABLE C, No. 2—SHOWING STREETS PAVED IN 1901.—Continued.

	Streets Paved.	Location.	Material.	Length.	Sq. Yds.	Cost per Sq. Yd.	Final Est.	Total Cost per Comptroller.	Assessment on Property	Assessment on City.	Contractor.	Character of Foundation Laid.	Remarks.
36	Third st.....	Bloomfield ave. to Abington ave....	Ob. Gr. Blk	823	5,140	$2.00	$12,406.07	$13,473.22	$10,883.91	$2,589.31	David Harper	Sand.	Not completed until 1902.
37	Verona ave.....	Washington ave. to Parker st.....	"	2,000	10,000	1.85	19,506.00				J. R'sev'lt Shanley	"	
38	Ward st.....	Market st. to Hamilton st.....	"	638	2,023	2.63	6,203.14	6,920.75	5,037.85	1,882.90	David Harper....	Concrete	Total cost see Lincoln Ave. Telford.
39	Magazine st.....	Ferry st. to Frankfort st.....	"	2,633	5,789	2.73	20,376.14	21,872.75	17,078.52	4,794.23	John F. Shanley..	"	
40	Lincoln ave.....	Carteret st. to Bryant st.....	Brick	313	1,125	2.25	2,879.50				David Harper....	"	
41	Mt. Prospect ave.	Abington ave. to Elwood ave.....	"	2,752	13,249	2.33	32,792.61	35,156.81	30,421.02	4 735.79	Newark Pav'g Co.	"	
42	School House alley	Market st. to Nutria st.....	"	111								"	Private.
43	Lincoln ave.....	Arlington ave. to Carteret st.....	Telford	3,083	8,862	0.97	17.141.05	21,523.45	17,926.23	3,597.22	James Seme.....	"	Total cost includes brick pavement.
44	Parker st.....	Montclair ave. to Verona ave.....	"	850	2,672	0.97	4,480.94	5,016.65	4,068.37	948.28	" "	"	
	Total.....			54,539	201.962		$427,436 32						

TABLE C, No. 3.—SHOWING STREETS PAVED IN 1902.

No.	Streets Paved.	Location.	Material.	Length.	Square Yards.	Cost per Square Yard.	Final Estimate.	Total Cost per Comptroller.	Assessment on Property.	Assessment on City.	Contractor.	Character of Foundation Laid.	Remarks.
1	Camden st.....	Warren st. to Thirteenth ave.....	Asphalt	1,772	5,920	$1.92½	$13,083.00	$14,091.55	$12,946.12	$1,145.43	Barber Asp. Co...	Concrete	
2	Franklin st.....	Broad st. to Mulberry st.....	"	794	2,259	1.75	4,954.69	5,591.70	5,000.73	590.97	Essex A. & C. Co.	"	
3	Lillie st.....	W. Kinney st. to Waverly ave.....	"	1,833	5,898	1.92½	12,923.65	13,836.10	11,649.58	2,186.52	Barber Asp. Co...	"	
4	Morris ave.....	17th ave. to W. Kinney st., Springfield ave. to Dickerson st.....	"	5,850	20,537	1.93	45,049.10	47,403.65	41,562.52	5,841.13	" "	"	
5	Mott st.....												
6	Pennington st....	Market st. to Passaic ave.....	"	1,085	4,041	1.89	8,773.61	9,527.30	7,979.26	1,548.04	" "	"	
7	School st.....	N. J. R. R. ave. to Pacific st.....	"	1,800	5,952	1.75	11,272.58	12,193.40	10,828.10	1,365.30	Essex A. & C. Co.	"	
8	S. Eleventh st....	Wickliffe st. to Wilsey st.....	"	360	1,180	1.92½	2,622.31	3,038.60	2,626.69	411.91	Barber Asp. Co...	"	
9	S. Sixth st.....	Central ave. to Twelfth ave.....	"	1,642	6,526	1.92½	13,883.53	15,108.00	12,941.44	2,166.56	" "	"	
10	Wakeman ave....	Twelfth ave. to Thirteenth ave.....	"	767	2,971	1.92½	6,104.58				" "	"	For total cost see Sixth st. granite
11	Warren st.....	Arlington ave. to May st.....	"	432	1,682	1.89	3,531.57	3,925.20	3,882.97	42.23	" "	"	
12	Washington st....	Halsey st. to Plane st.....	"	707	2,760	1.93	6,003.63	6,579.35	5,358.69	1,220.66	" "	"	
13	Avon ave.....	William st. to Spruce st.....	"	2,880	9,412	2.09	23,082.33	33,262.60	27,340.27	5,922.33	" "	"	Total cost includ granite.
14	Baldwin st.....	Belmont ave. to Bergen st.....	Ob. Gr. Blk	1,650	5,600	1.97	13,276.98	14,429.25	11,990.45	2,438.80	J. R. Shanley....	Sand	
15	Bank st.....	High st. to Broome st.....	"	1,122	4,091	1.99	8,946.61	9,675.70	8,683.63	992.07	" "	"	
		High st., Breintnall pl., Breintnall pl., Wallace pl.....	"	2,360	2,697 9,298	2 04 2.79	28,784.51	30,645.05	22 175.52	8,469.53	" "	Concrete	
16	Bank st. & 12th av.	Wallace pl. to S. Twelfth st.....	"	2,560	10,800	1.93	22,055.60				James Seme.....	Sand	For total cost Report 1903.
17	Breintnall pl.....	High st. to Bank st.....	"	541	1,394	2.79	4,813.74	5,484.65	4,547.64	937.01	J. R. Shanley....	Concrete	
18	Central ave.....	Burnet st. to High st.....	"	215	531	2.79	1,815.67	2,156.90	1 502.92	653.98	" "	"	
19	Chapel st.....	Bowery st. to Lister ave.....	"	90	947	1.98	2,404.67	14,352.40	10,605.99	3 746.41	" "	Sand	Total cost inclu paving done 1 1902.
	E. Kinney st.....	Pacific st. to Jefferson st.....	"			2.00					David Harper....	"	Not commenced til 1903.
20	First st.....	Orange st. to Warren st.....	"	2,170	5,702	1.98	12,948.41	13,831.90	12,821.77	1,010.13	" "	"	
21	Frederick st.....	Ferry st. to Passaic ave.....	"	1,450	4,530	1.93	9,442.66	10,082.70	8,838.15	1,244.55	James Seme.....	"	
22	Grafton ave.....	Mt. Prospect ave. to Ridge st.....	"	543	2,776	2.00	6,064.55	13,133.40	11,380.00	1,753.40	" "	"	Total cost inclu Grafton ave. ford.
23	Hawkins st.....	Ferry st. to Plum Point Lane.....	"	1,185	4,269	1.94	9,239.23	9,859.50	8 597.64	1,261.86	J. R. Shanley....	"	
24	Jones st.....	Springfield ave. to S. Orange ave..	"	520		2.79					" "	Concrete	
25	Lang st.....	Walnut st. to Elm road.....	"	834	3,410	2.00	7,697.72	8 323.15	5 872.90	2,450.25	David Harper....	Sand	
26													

332996

TABLE C, No. 3—CONTINUED.

No.	Streets Paved.	Location.	Material.	Length.	Square Yards.	Cost per Square Yard.	Final Estimate.	Total Cost per Comptroller.	Assessment on Property.	Assessment on City.	Contractor.	Character of Foundation Laid.	Remarks.
27	Market st.....	Comes alley to High st.....	Ob. Gr. Blk	440	2,064	$2.79	$6,846.94	$7,560.20	$5,425.04	2,135.16	J. R. Shanley....	Concrete	
28	South st.....	Mulberry st. to Pacific st.....	"	1,486	7,327	1.97	15,755.04	16,792.65	13,913.31	2,879.34	" "	Sand	
29	S. Sixth st.....	Twelfth ave. to Central ave.....	"	1,580	6,162	1.94	13,124.06	20 753.25	17,985.53	2,767.72	James Seme.....	"	Total cost includes S. 6th st. asphalt.
30	Verona ave.....	Washington ave. to Parker st.....	"	774	4,563	1.85	9,694.48	41,322.85	33,032.31	8,290.54	J. R. Shanley....	"	Total cost includes paving done in 1901 and ⅝ Verona ave brick.
31	Vesey st.....	N. J. R. R. ave. to McWhorter st...	"	901	2,925	1.94	6,567.67	7,078.60	6,201.79	876.81	" "	"	
32	Washington st....	Market st. to William st.....	"	830	2,298	2.74	7 909.54				" "	Concrete	Total cost see Washington st. asphalt.
33	W. Kinney st.....	Broome st. to Belmont ave.....	"	765	1,797	2.05	4,451.00	5.096 75	4,640.44	456.31	" "	Sand	
34	Montclair ave....	Mt. Prospect ave. to First st.....	"	1,820	3,176	1.88	5,970.88	16,934.70	13,399.00	3,535.70	John F. Shanley..	"	Total cost includes Montclair ave. telford.
35	Aqueduct st.....	Fifth ave. to Bloomfield ave.....	Brick	1,774	6,882	1.88	14 922.97	16,310.65	14,844 86	1,465.79	John J. Connors...	Concrete	
36	Clifton ave.....	Bloomfield ave. to Second ave.....	"	1,430	6,053	2.05	13,986.12	15,012.50	13,609.91	1,402.50	David Harper....	"	
37	Crane st.....	Summer ave. to Cutler st.....	"	675	2,468	1.98	5,657.39	6,260.25	5.296.16	964.09	J. R. Shanley....	"	
38	Cutler st.....	Fifth ave. to Seventh ave.....	"	1,524	5,839	1.87	12,916.57	14,202.20	12,517.45	1,744.75	John J. Connors.	"	
39	Dickerson st.....	First st. to Warren st.....	"	1,414	5,640	2.10	13,257.19	14,142.50	9 134.45	5,008.05	Newark Pav'g Co.	"	
40	Grove st.....	Market st. to Bank st.....	"	339	860	1.98	2,084.44	2,499.65	2,231.96	267.69	J. R. Shanley....	"	
41	Library court....	Market st. to Bank st.....	"	177	199	2.04	425.91	698.85	511.30	187.55	J. R. Connors.	"	
42	Sixth ave.....	Stone st. to Clifton ave.	"	1,075	5,509	2.00	11,925.36	12.965.50	8,833.48	4,132.02	J. R. Shanley....	"	
43	Verona ave.....	Parker st. to DeGraw ave.....	"	580	4,075	1.85	9,395.20				Newark Pav'g Co.	"	For total cost see Verona ave. granite.
44	DeGraw ave.....	Elwood ave. to Verona ave.....	Telford	3,125	9,575	.97	16,210.00	17,403.25	14,620.29	2,782.96	James Seme.....	"	
45	Grafton ave.....	Ridge st. to First st.....	"	1,300	3,302	97	6,177.88				" "	"	Total cost see Grafton ave. granite.
46	Highland ave.....	Elwood ave. to Verona ave.....	"	3,054	9,550	.97	15,961.69	17,000.35	15,086.46	1.913.89	" "	"	
47	Lake st.....	Elwood ave. to Verona ave.....	"	3,055	9,576	.97	16,124.66	17,363.65	14,654.16	2,709.49	" "	"	
48	Montclair ave....	Ridge st. to First st.....	"	1,247	5,320	.97	9,901.30				" "	"	Total cost see Montclair ave. granite.
49	Ridge st.....	Montclair ave. to Verona ave.....	"	854	2,701	.97	4,435.32	5,017.30	4,418.32	598.98	" "	"	
		Grand total.....		65,380	230,356		$491,876.54						

TABLE C, No. 4—SHOWING STREETS PAVED IN 1903.

	Streets Paved.	Location.	Material.	Length.	Sq. Yds.	Cost per Sq. Yd.	Final Est.	Total Cost per Comptroller.	Assessment on Property.	Assessment on City.	Contractor.	Character of Foundation Laid	Remarks
1	Avenue C	Parkhurst st. to Emmett st	Ob. Gr. Blk	960	4,817	$2.23	$11,979.47				Newark Pav'g Co.	Sand.	
2	Bergen st	Warren st. to Hawthorne ave	"	10,979	26,510	3.15	97,472.30				J. R. Shanley	Concrete.	
3	Dawson st	Johnson st. to Parkhurst st	"	1,160	4,211	2.23	10,423.92				Newark Pav'g Co.	Sand.	
4	Downing st	Jackson st. to Jefferson st	"	960	2,929	2.18	7,538 64				Thos. A. O'Connor	"	
5	Hartford st	Norfolk st. to Warren st	"	1,600	5,935	2.18	14 108.98	$14,955.90	$13 678.90	$1,277.00	J. R. Shanley	"	
6	Hoyt st	Warren st. to Sussex ave	"	1,300	4,410	2.18	11,266.52	12,101.74	9 923.91	2 177.83	" "	"	
7	Livingston st	Waverly ave. to Avon ave	"	1 140	3,747	2.29	9,365.48				F. M. Tichenor	"	
8	Madison ave	Belmont ave. to Chadwick ave	"	2,160	8.341	2.18	21,403.25	22,558.65	13,775 10	8 783.55	J. R. Shanley	"	
9	Madison st	Lafayette st. to Market st	"	1.600	6 054	2 18	14.007.76				" "	"	
10	Seventeenth ave	Belmont ave. to Fairmount ave	"	1,916	7,807	2.28	20,632.07				" "	"	
11	Van Buren st	Ferry st. to Passaic ave	"	1.600	5,293	2.19	12,776.17	13,551.40	11 542.12	2,009.28	James Seme	"	
12	Van Buren st	Nichols st. to Clifford st	"	1,615	5,724	2 25	17 880.33				J. R. Shanley	"	Total cost includes paving done in 1902.
13	Bank st. & 12th av.	Wallace pl. to South 12th st	"	800	3,194	1 93	6,654.47	30,840.82	25 999.62	4.841.20	James Seme	"	
14	East Kinney st	Pacific st. to Jefferson st	"	600	1,980	2.00	4,170 40				David Harper	"	
15	Jones st	Springfield ave. to S. Orange ave	"	520	1,589	2.79	5,479.38	6,161.15	5,603.91	557.24	J. R. Shanley	Concrete.	
16	Ann st	Hamburg pl. to Elm road	Brick	1,460	5,949	1.95	13,429.76				Newark Pav'g Co.	"	
17	Dark Lane	Jones st. to Hayes st	"	300	652	1.95	1,788.98				Wm. Van Keuren	"	
18	Elliot st	Washington ave. to Summer ave	"	960	3,805	1.97	8,063.25	8 822.05	8,129.36	692.69	J. R. Shanley	"	
19	Fourteenth ave	Hayes st. to South 11th st	"	3 800	13,379	1.95	29,113.63				Wm. Van Keuren	"	
20	Irving st	Washington ave. to Summer ave	"	1,223	4 897	2.09	11,145.18	11,926.50	10,078.05	1,848.45	Newark Pav'g Co.	"	
21	Montclair ave	Washington ave. to Summer ave	"	1,200	6.216	2.19	14.554.76				" "	"	
22	Mt. Pleasant ave.	Clay st. to Harvey st	"	4,400	14,454	2.03	33,701.56				Barber Asp. Co.	"	
23	Oliver st	N. J. R. R. ave. to Jefferson st	"	2,140	6,814	1 83	14,387.69				J. R. Shanley	"	
24	Oraton st	Chester ave. to Delavan ave	"	700	2,850	1.89	6,163.89				Wm. Van Keuren	"	
25	Prospect pl	Fourteenth ave. to Bruce st	"	350	975	2.09	2,234.62				J. R. Shanley	"	
26	Saybrook pl	Park pl. easterly 400 ft	"	400	1,524	1.94	3,234 13				" "		
27	Tichenor st	N. J. R. R. ave. to Pacific st	"	1,900	6,675	1.83	14,153.46				" "		
28	Wood st	Seventh ave. to Crane st	"	360	896	1.99	2,216.10				Newark Pav'g Co.		
29	Elwood pl	Lincoln ave. to Summer ave	Telford	400	1,154	.99	2,462.76	2.849.30	2,759.60	89.70	"		
30	Bleecker st	Halsey st. to High st	Bitulithic	1,430	5,544	2.25	15,184.53				Warren Bros. Co.		
31	Osborne ter	Clinton ave. to Hawthorne ave	"	1,900	7,608	2.25	18,649.33				" "		
32	Madison st	Elm st. to Lafayette st	Asphalt	400	1,432	1.97	3,197.46				Barber Asp. Co.		
		Grand Total		52 233	177,365		$458,840.23						

TABLE C, No. 5—SHOWING THE INCREASE AND DECREASE IN THE DIFFERENT KINDS OF PAVEMENT, AND OF STREETS GRADED, CURBED, ETC., FOR EACH YEAR FROM 1891 TO 1904.

No. of Miles of Granite Block.	No. of Miles of Belgian Block.	No. of Miles of Telford.	No. of Miles of Sheet Asphalt.	No. of Miles of Asphalt Block.	No. of Miles of Brick.	No. of Miles of Cobble.	No. of Miles of Bitulithic.	Total No. of Miles of Paved Streets.	No. of Miles of Graded Streets.	Total No. of Miles of Improved Streets.	Year.
10.26	4.72	12.08	1.08	0.28		23.87		52.29	143.79	196.08	January 1, 1892
9.39	3.85	12.08	0.64	0.28		24.88		51.12	139.22	190.34	" " 1891
+ 0.87	+ 0.87		+ 0.44			− 1.01		+ 1.17	+ 4.57	+ 5.74	
13.26	8.17	12.08	3.00	0.28		22.98		59.77	137.88	197.65	January 1, 1893
10.26	4.72	12.08	1.08	0.28		23.87		52.29	143.79	196.08	" " 1892
+ 3.00	+ 3.45		+ 1.92			− 0.89		+ 7.48	− 5.91	+ 1.57	
16.04	8.89	11.82	3.96	0.14		22.16		63.01	138.44	201.45	January 1, 1894
13 26	8.17	12.08	3.00	0.28		22.98		59.77	137.88	197.65	" " 1893
+ 2.78	+ 0.72	− 0.26	+ 0.96	− 0.14		− 0.82		+ 3.24	+ 0.56	+ 3.80	
19.26	9.99	10.94	4.18	0.00		20.67		65.04	139.06	204.10	January 1, 1895
16.04	8 89	11.82	3.96	0.14		22.16		63.01	138.44	201.45	" " 1894
+ 3.22	+ 1.10	− 0.88	+ 0 22	− 0 14		− 1.49		+ 2.03	+ 0.62	+ 2.65	
23.40	12.34	10 94	11.67		1.26	17.21		76.82	127.72	204.54	January 1, 1896
19.26	9.99	10.94	4.18		0.00	20.67		65.04	139.06	204.10	" " 1895
+ 4.14	+ 2.35		+ 7.49		+ 1.26	− 3.46		+ 11.78	− 11.34	+ 0.44	
27.63	12.34	10.64	18.82		2.62	15.53		87.58	118.93	206.51	January 1, 1897
23.40	12.34	10.94	11.67		1.26	17.21		76.82	127.72	204.54	" " 1896
+ 4.23		− 0.30	+ 7.15		+ 1.36	− 1.68		+ 10.76	− 8.79	+ 1.97	

TABLE C No. 5—Continued.

No. of Miles of Granite Block.	No. of Miles of Belgian Block.	No. of Miles of Telford.	No. of Miles of Sheet Asphalt.	No. of Miles of Asphalt Block.	No. of Miles of Brick.	No. of Miles of Cobble.	No. of Miles of Bitulithic.	Total No. of Miles of Paved Streets.	No. of Miles of Graded Streets.	Total No. of Miles of Improved Streets.	Year.
28.52	12.34	11.28	20.08		3.19	14.98		90.39	117.56	207.95	January 1, 1889
27.63	12.34	10.64	18.82		2.62	15.53		87.58	118.93	206.51	" " 1897
+ 0.89		+ 0.64	+ 1.26		+ 0.57	— 0.55		+ 2.81	— 1.37	+ 1.44	
32.60	12.29	11.28	28.11		3.76	14.03		102.07	107.00	209.07	January 1, 1899
28.52	12.34	11.28	20.08		3.19	14.98		90.39	117.56	207.95	" " 1898
+ 4.08	— 0.05		+ 8.03		+ 0.57	— 0.95		+ 11.68	— 10.56	+ 1.12	
33.84	12.29	11.28	29.17		3.76	13.56		103.90	106.82	210.72	January 1, 1900
32.60	12.29	11.28	28.11		3.76	14.03		102.07	107.00	209.07	" " 1899
+ 1.24			+ 1.06			— 0.47		+ 1.83	— 0.18	+ 1.65	
33.96	12.29	10.05	41.54		3.85	12.75		114.44	104.04	218.48	January 1, 1901
33.84	12.29	11.28	29.17		3.76	13.56		103.90	106.82	210.72	" " 1900
+ 0.12		— 1.23	+ 12.37		+ 0.09	— 0.81		+ 10.54	— 2.78	+ 7.76	
37.24	12.29	10.80	47.25		4.45	12.51		124.54	94.12	218.66	January 1, 1902
33.96	12.29	10.05	41.54		3.85	12.75		114.44	104.04	218.48	" " 1901
+ 3.28		+ 0.75	+ 5.71		+ 0.60	— 0.24		+ 10.10	— 9.92	+ 0.18	
41.76	12.29	13.19	51.02		6.15	10.81		135.22	100.20	235.42	January 1, 1903
37.24	12.29	10.80	47.25		4.45	12.51		124.54	94.12	218.66	" " 1902
+ 4.52		+ 2.39	+ 3.77		+ 1.70	— 1.70		+ 10.68	+ 6.08	+ 16.76	
47.235	12.29	*16.165	51.095		9.785	10.44	0.63	*147.64	88.26	236.90	January 1, 1904
41.76	12.29	13.19	51.02		6.15	10.81	0.00	135.22	100.20	235.42	" " 1903
+ 5.475		+ 2.975	+ 0.075		+ 3.635	— 0.37	+ 0.63	+ 12.42	— 11.94	+ 0.48	

*Not including 2.90 miles of telford pavement in Frelinghuysen avenue and Elizabeth avenue, contained in the territory known as Clinton Annexation No. 2.

TABLE C, No. 5—SHOWING THE INCREASE AND DECREASE IN THE DIFFERENT KINDS OF PAVEMENT, AND OF STREETS GRADED, CURBED, ETC., FOR EACH YEAR FROM 1891 TO 1904.

No. of Miles of Granite Block.	No. of Miles of Belgian Block.	No. of Miles of Telford.	No. of Miles of Sheet Asphalt.	No. of Miles of Asphalt Block.	No. of Miles of Brick.	No. of Miles of Cobble.	No. of Miles of Bitulithic.	Total No. of Miles of Paved Streets.	No. of Miles of Graded Streets.	Total No. of Miles of Improved Streets.	Year.
10.26	4.72	12.08	1.08	0.28		23.87		52.29	143.79	196.08	January 1, 1892
9.39	3.85	12.08	0.64	0.28		24.88		51.12	139.22	190.34	" " 1891
+ 0.87	+ 0.87		+ 0.44			− 1.01		+ 1.17	+ 4.57	+ 5 74	
13.26	8.17	12.08	3.00	0.28		22.98		59.77	137.88	197.65	January 1, 1893
10.26	4.72	12.08	1.08	0.28		23.87		52.29	143.79	196.08	" " 1892
+ 3.00	+ 3.45		+ 1.92			− 0.89		+ 7 48	− 5.91	+ 1.57	
16.04	8.89	11.82	3.96	0.14		22.16		63.01	138.44	201.45	January 1, 1894
13 26	8.17	12.08	3.00	0.28		22.98		59.77	137.88	197.65	" " 1893
+ 2.78	+ 0.72	− 0.26	+ 0.96	− 0.14		− 0.82		+ 3.24	+ 0.56	+ 3.80	
19.26	9.99	10.94	4.18	0.00		20.67		65.04	139.06	204.10	January 1, 1895
16.04	8 89	11.82	3.96	0.14		22.16		63.01	138.44	201.45	" " 1894
+ 3.22	+ 1.10	− 0.88	+ 0 22	− 0 14		− 1.49		+ 2.03	+ 0.62	+ 2.65	
23.40	12.34	10 94	11.67		1.26	17.21		76.82	127.72	204.54	January 1, 1896
19.26	9.99	10.94	4.18		0.00	20.67		65.04	139.06	204.10	" " 1895
+ 4.14	+ 2.35		+ 7.49		+ 1.26	− 3.46		+ 11.78	− 11.34	+ 0.44	
27.63	12.34	10.64	18.82		2.62	15.53		87.58	118.93	206.51	January 1, 1897
23.40	12.34	10.94	11.67		1.26	17.21		76.82	127.72	204.54	" " 1896
+ 4.23		− 0.30	+ 7.15		+ 1.36	− 1.68		+ 10.76	− 8.79	+ 1.97	

TABLE C No. 5—Continued.

No. of Miles of Granite Block.	No. of Miles of Belgian Block.	No. of Miles of Telford.	No. of Miles of Sheet Asphalt.	No. of Miles of Asphalt Block.	No. of Miles of Brick.	No. of Miles of Cobble.	No. of Miles of Bitulithic.	Total No. of Miles of Paved Streets.	No. of Miles of Graded Streets.	Total No. of Miles of Improved Streets.	Year.
28.52	12.34	11.28	20.08		3.19	14.98		90.39	117.56	207.95	January 1, 1889
27.63	12.34	10.64	18.82		2.62	15.53		87.58	118.93	206.51	" " 1897
+ 0.89		+ 0.64	+ 1.26		+ 0.57	− 0.55		+ 2.81	− 1.37	+ 1.44	
32.60	12.29	11.28	28.11		3.76	14.03		102.07	107.00	209.07	January 1, 1899
28.52	12.34	11.28	20.08		3.19	14.98		90.39	117.56	207.95	" " 1898
+ 4.08	− 0.05		+ 8.03		+ 0.57	− 0.95		+ 11.68	− 10.56	+ 1.12	
33.84	12.29	11.28	29.17		3.76	13.56		103.90	106.82	210.72	January 1, 1900
32.60	12.29	11.28	28.11		3.76	14.03		102.07	107.00	209.07	" " 1899
+ 1.24			+ 1.06			− 0.47		+ 1.83	− 0.18	+ 1.65	
33.96	12.29	10.05	41.54		3.85	12.75		114.44	104.04	218.48	January 1, 1901
33.84	12.29	11.28	29.17		3.76	13.56		103.90	106.82	210.72	" " 1900
+ 0.12		− 1.23	+ 12.37		+ 0.09	− 0.81		+ 10.54	− 2.78	+ 7.76	
37.24	12.29	10.80	47.25		4.45	12.51		124.54	94.12	218.66	January 1, 1902
33.96	12.29	10.05	41.54		3.85	12.75		114.44	104.04	218.48	" " 1901
+ 3.28		+ 0.75	+ 5.71		+ 0.60	− 0.24		+ 10.10	− 9.92	+ 0.18	
41.76	12.29	13.19	51.02		6.15	10.81		135.22	100.20	235.42	January 1, 1903
37.24	12.29	10.80	47.25		4.45	12.51		124.54	94.12	218 66	" " 1902
+ 4.52		+ 2.39	+ 3.77		+ 1.70	− 1.70		+ 10.68	+ 6.08	+ 16.76	
47.235	12.29	*16.165	51.095		9.785	10.44	0 63	*147.64	88.26	236.90	January 1, 1904
41.76	12.29	13.19	51.02		6.15	10.81	0.00	135.22	100.20	235.42	" " 1903
+ 5.475		+ 2.975	+ 0.075		+ 3.635	− 0.37	+ 0 63	+ 12.42	− 11.94	+ 0.48	

*Not including 2.90 miles of telford pavement in Frelinghuysen avenue and Elizabeth avenue, contained in the territory known as Clinton Annexation No. 2.

TABLE C, No. 6.

Showing all Asphalt Pavements Laid up to January 1st, 1904; Years of Guarantee and Expiration of Same, etc.

Streets Paved.	Location.	Square Yards.	Cost per Sq. Yd.	Thickness of Concrete.	Thickness of Asp. Cushion or Binder.	Contractor.	Date of Acceptance.	Expiration of Guarantee.	Cost as per Final Est.
Broad st.....	Belleville ave. to Gouverneur st...	6,654	$2.80	6 in.	1½ in. C	Barber Asp. Co...	Oct. 8, 1889	Oct. 8, 1894	$18,992.70
Orchard st.....	Chestnut st. to Thomas st.....	5,496	2.93	"	"	" " ...	Jan. 28, 1890	Jan. 28, 1895	17,062.88
Gouverneur st...	Broad st. to Belleville ave.....	1,244	2.85	"	"	" " ...	May 29, 1891	May 29, 1896	3,747.60
Park st.....	Mulberry st. to Park pl.....	2,752	2.85	"	"	" " ...	June 26, 1891	June 26, 1896	8,236.51
South st.....	N. J. R. R. ave. to Pennsylvania ave.	4,911	2.89	"	"	" " ...	Oct. 19, 1891	Oct. 19, 1896	14,699.69
		21,057							$62,739.38
N. Canal st.....	Park pl. to Mulberry st.....	1,838	2.93	"	"	Barber Asp. Co...	July 25, 1892	July 25, 1897	5,804.64
James st.....	Washington st. to Burnet st.....	3,285	2.87	"	"	" " ...	Aug. 2, 1892	Aug. 2, 1897	12,209.75
Washington st...	Broad st. to Central ave.....	4,502	2.87	"	"	" " ...	Aug. 2, 1892	Aug. 2, 1897	13,189.20
Washington pl...	Broad st. to Washington st.....	2,276	2.87	"	"	" " ...	Aug. 2, 1892	Aug. 2, 1897	6,882.62
Gould ave.....	Warren st. to City Line.....	5,401	2.87	"	"	" " ...	Aug. 30, 1892	Aug. 30, 1897	16,006.32
Grant st.....	Broad st. to Spring st.....	1,615	2.83	"	"	" " ...	Aug. 30, 1892	Aug. 30, 1897	4,663.90
Harvey st.....	Belleville ave. to Mt. Pleasant ave..	2,051	2.80	"	"	" " ...	Aug. 30, 1892	Aug. 30, 1897	5,830.60
Oriental st.....	Belleville ave. to Mt. Pleasant ave..	2,066	2.80	"	"	" " ...	Aug. 30, 1892	Aug. 30, 1897	5,902.17
Tichenor st.....	Broad st. to N. J. R. R. ave.....	3,092	2.87	"	"	" " ...	Aug. 30, 1892	Aug. 30, 1897	9,027.14
Broad st.....	Rector st. to 150 feet north.....	793	2.87	"	"	" " ...	Sept. 27, 1892	Sept. 27, 1897	3,063.66
Thomas st.....	Clinton ave. to N. J. R. R. ave....	5,524	2.87	"	"	" " ...	Nov. 22, 1892	Nov. 22, 1897	16,896.58
Park pl.....	N. Canal st. to Rector st.....	6 917	2.87	"	"	" " ...	Sept. 27, 1892	Sept. 27, 1897	20,977.14
Gouverneur st...	Mt. Pleasant ave. to Broad st.....	867	2.80	"	"	" " ...	Sept. 27, 1892	Sept. 27, 1897	2,455.77
		40,227							$122,909.49
Broad st.....	Gouverneur st. to Harvey st.....	11,508	2.80	"	"	Barber Asp. Co...	Aug. 29, 1893	Aug. 28, 1898	33,165.71
Newton st.....	Fourteenth ave. to Cabinet st.....	7,638	2.85	5 in	1½ in. C.	" " ...	Sept. 26, 1893	Sept. 26, 1898	22,834.56
		19,146							$ 56,000.27
Clinton st.....	Mulberry st. to Broad st.....	1,851	2.73	6 in.	½ in C.	N. J. Asphalt Co.	Aug. 28, 1894	Aug. 28, 1899	5,119.18
Camp st.....	Mulberry st. to Orchard st.....	1,397	2.83	"	"	Barber Asp. Co...	Sept. 25, 1894	Sept. 25, 1899	381.10
		3,248							$ 5,500.28

TABLE C, No. 6—CONTINUED.

Streets Paved.	Location.	Square Yards.	Cost per Sq. Yd.	Thickness of Concrete.	Thickness of Asp. Cushion or Binder.	Contractor.	Date of Acceptance.	Expiration of Guarantee.	Cost as per Final Est.
Orchard st.....	Chestnut st. to Walnut st.....	3,182	$2.87	6 in.	½ in. C.	Barber Asp. Co...	June 25, 1895	June 25, 1900	9,623.79
Pennington st.....	Mulberry st. to Broad st.....	3,135	2.87	"	"	" " ...	July 29, 1895	July 29, 1900	9,201.05
Summer ave.....	Bloomfield ave. to Chester ave.....	21,762	2.67	"	1½ in. B.	N. J. Asphalt Co.	Sept. 28, 1895	Sept. 28, 1900	45,113.42
Sherman ave.....	Parkhurst st. to Poinier st.....	10,680	2.69	"	"	Barber Asp. Co...	Sept. 28, 1895	Sept. 28, 1900	29,301.16
Somerset st.....	Avon ave. to Montgomery st.....	8,826	2.69	"	"	" " ...	Sept. 28, 1895	Sept. 28, 1900	24,501.64
Wright st.....	Broad st. to Clinton ave.....	7,538	2.69	"	"	" " ...	Sept. 28, 1895	Sept. 28, 1900	20,754.27
Garside st.....	Bloomfield ave. to Third ave.....	3,780	2.65	"	"	" " ...	Oct. 26, 1895	Oct. 26, 1900	10,252.20
Thirteenth ave...	Littleton ave. to S. Tenth st.....	5,870	2.68	5 in.	"	N. J. Asphalt Co.	Oct. 26, 1895	Oct. 26, 1900	16,199.78
Belmont ave.....	Clinton ave. to Madison ave.....	1,202	2.70	6 in.	"	Barber Asp. Co...	Dec. 9, 1895	Dec. 9, 1900	3,438.70
Bruce st.....	Springfield ave. to Warren st.....	13,455	2.65	5 in.	"	" " ...	Dec. 9, 1895	Dec. 9, 1900	36,939.78
Clinton ave.....	Broad st. to W. N. Branch R. R....	30,178	2.70	6 in.	"	" " ...	Dec. 9, 1895	Dec. 9, 1900	83,549.81
Emmet st.....	Frelinghuysen ave. to Sherman ave	1,207	2.67	5 in	"	" " ...	Dec. 9, 1895	Dec. 9, 1900	3,285.09
Littleton ave.....	Fifteenth ave. to Warren st.....	17,819	2.68	"	"	N. J. Asphalt Co.	Dec. 9, 1895	Dec. 9, 1900	49,439.37
Lafayette st.....	N. J. R. R. ave. to Hamburg pl...	17,824	2.68	6 in.	"	" " "	Dec. 9, 1895	Dec. 9, 1900	49,541.02
Madison ave.....	Clinton ave. to Belmont ave.....	*500			"	Barber Asp. Co...	Dec. 9, 1895	Dec. 9, 1900	†
N. Seventh st....	Orange st. to Fourth ave.....	12,914	2.68	5 in.	"	" " ...	Dec. 9, 1895	Dec. 9, 1900	35,783.76
Oliver st.....	Mulberry st. to N. J. R. R. ave...	1,054	2.67	"	"	" " ...	Dec. 9, 1895	Dec. 9, 1900	2,921.63
Scott st.....	Mulberry st. to Orchard st.....	875	2.65	"	"	" " ...	Dec. 9, 1895	Dec. 9, 1900	2,415.40
Clifton ave.....	Bloomfield ave. to Fifth ave.....	3,380	2.70	"	"	" " ...	Dec. 30, 1895	Dec. 30, 1900	9,507.07
Chestnut st.....	Broad st. to Mulberry st.....	2,330	2.69	6 in.	"	" " ...	July 29, 1895	July 29, 1900	6,479.05
		167,511							$448,247.99
Eagles st.....	James st. to Orange st.....	2,257	2.67	6 in	"	Barber Asp. Co...	June 20, 1896	June 20, 1901	6,924.49
Bank st.....	Broad st. to Plane st.....	3,068	2.59	"	"	Newark Pav'g Co.	July 25, 1896	July 25, 1901	9,026.38
Cedar st.....	Broad st. to Halsey st.....	1,087	2.67	"	"	Barber Asp. Co...	July 25, 1896	July 25, 1901	3,445.91
S. Eighth st.....	Warren st. to S. Orange ave.....	16,028	2.64½	"	"	N. J. Asphalt Co.	July 25, 1896	July 25, 1901	44,978.63
Lincoln Park.....	Broad st. to Spruce st.....	3,678	2.57	"	"	Barber Asp. Co...	Aug. 24, 1896	Aug. 24, 1901	†
Nursery st.....	Belleville ave. to Summer ave.....	1,853	2.50	5 in.	"	N. J. Asphalt Co.	Aug. 24, 1896	Aug. 24, 1901	4,957.89
Walnut st.....	Broad st. to N. J. R. R. ave.....	5,717	2.59	6 in.	"	Newark Pav'g Co.	Aug. 24, 1896	Aug. 24, 1901	16,400.14
Wakeman ave....	Arlington ave. to Second ave.....	5,963	2.50	5 in.	"	N. J. Asphalt Co.	Aug. 24, 1896	Aug. 25, 1901	15,968.45
Astor st.....	Clinton ave. to Sherman ave.....	1,882	2.59	6 in.	"	Newark Pav'g Co.	Sept. 28, 1896	Sept. 28, 1901	5,525.59
Pennsylvania ave.	Lincoln Park to Poinier st.....	11,313	2.60	"	"	J. F. Shanley....	Sept. 28, 1896	Sept. 28, 1901	31,468.36
Summit st.....	Sussex ave. to James st.....	1,858	2.64	5 in.	"	Barber Asp. Co...	Sept. 28, 1896	Sept. 28, 1901	5 422.02
Waverly pl.....	High st. to Somerset st.....	3,401	2.52	"	"	N. J. Asphalt Co.	Sept. 28, 1896	Sept. 28, 1901	9,208.63
William st.....	Broad st. to Washington st.....	3,307	2.60	6 in	"	Barber Asp. Co...	Sept. 28, 1896	Sept. 28, 1901	9,413.60

* Over cobble pavement. † Included in Clinton Avenue.

TABLE C, No. 6—CONTINUED.

Streets Paved.	Location.	Square Yards.	Cost per Sq. Yd	Thickness of Concrete.	Thickness of Asp. Cushion or Binder.	Contractor.	Date of Acceptance.	Expiration of Guarantee.	Cost as per Final Est.
Barclay st.....	Avon ave. to W. Kinney st.....	11,533	$2.52	5 in.	1½ in. B.	N. J. Asphalt Co.	Oct. 26, 1896	Oct. 26, 1901	31,667.89
Crane st.....	Summer ave. to Belleville ave.....	2,855	2.58	6 in.	"	J. F. Shanley....	Oct. 26, 1896	Oct. 26, 1901	7,845.98
Elizabeth ave.....	Clinton ave. to Bigelow st.....	11,802	2.47	"	"	J. F. Shanley....	Oct. 26, 1896	Oct. 26, 1901	30,997.88
Monmouth st.....	Clinton ave. to Montgomery st.....	7,940	2.60	"	"	Barber Asp. Co...	Oct. 26, 1896	Oct. 26, 1901	22,125.40
N. Sixth st.....	Orange st. to Fifth ave.....	9,081	2.55	"	"	" " ...	Oct. 26, 1896	Oct. 26, 1901	24,901.57
Astor st.....	Sherman ave. to N. J. R. R. ave....	5,201	2.54	"	"	N. J. Asphalt Co.	Nov. 23, 1896	Nov. 23, 1901	14,669.12
Halsey st.....	Lincoln Park to Washington pl.....	16,580	2.59	"	"	Newark Pav'g Co.	Nov. 23, 1896	Nov. 23, 1901	48,544.88
Holland st.....	Springfield ave. to S. Tenth st.....	4,076	2.52	"	"	J. F. Shanley....	Nov. 23, 1896	Nov. 23, 1901	10,814.90
Linden st.....	Halsey st. to Washington st.....	1,038	2.54	"	"	N. J. Asphalt Co.	Nov. 23, 1896	Nov. 23, 1901	2,968 91
South Sixth st....	Springfield ave. to 13th ave.....	13,473	2.53	5 in.	"	" " "	Nov. 23, 1896	Nov. 23, 1901	36,513.72
		144,991							$393,790.34
Camden st.....	Springfield ave. to 13th ave.....	11,321	2.36	6 in.	"	J. F. Shanley....	Nov. 29, 1897	Nov. 29, 1902	28,599.23
Court st.....	High st. to Howard st.....	4,060	2.35	"	"	N. J. Asphalt Co.	Sept. 27, 1897	Sept. 27, 1902	10,409.29
Milford ave.....	Clinton ave. to Alpine st.....	5,950	2.35	"	"	" " "			14,799.36
New st.....	Broad st. to Arch st.....	4,402	2.35	"	"	" " "	Aug. 23, 1897	Aug. 23, 1902	12,236.04
		25,733							$ 66,043.92
Beaver st.....	Market st. to Clinton st.....	619	1.75	"	"	Barber Asp. Co...	Sept. 26, 1898	Sept. 26, 1908	1,014.95
Broome st.....	Avon ave. to Waverly ave.....	3,309	1.65	"	"	At. Al. Asp. Co..	Nov. 28, 1898	Nov. 28, 1908	6,649.68
Court st.....	Broad st. to Washington st.....	2,075	1.55	"	"	N. J. Asphalt Co.	June 27, 1898	June 27, 1908	4,152.46
East Kinney st...	Broad st. to N. J. R. R. ave.....	4,218	1.65	"	"	Barber Asp. Co...	Aug. 22, 1898	Aug. 22, 1908	8,245.23
Fulton st.....	Broad st. to Front st.....	3.038	1.67	"	"	N. J. Asphalt Co.	Oct. 31, 1898	Oct. 31, 1908	6,083.81
Garside st.....	Bloomfield ave. to 6th ave.....	5 884	1.41	"	"	N. A. P. & Con. Co.	Nov. 28, 1898	Nov. 28, 1908	10 255.77
Garside st.....	Second ave. to Third ave.....	3,361	1.65	"	"	At. Al. Asp. Co..	Dec. 31, 1898	Dec. 31, 1908	5,950.43
Hillside ave.....	Clinton ave. to Alpine st.....	3,673	1.67	"	"	Barber Asp. Co...	July 25, 1898	July 25, 1908	6,560.85
Hillside pl.....	Avon ave. to Waverly ave.....	3 974	1.67	"	"	" " ...	July 25, 1898	July 25, 1908	7,240.51
Howard st.....	Springfield ave. to W. Kinney st....	5,954	1.67	"	"	" " ...	Aug. 22, 1898	Aug. 22, 1908	11,386.13
Humbolt st.....	Warren st. to Orange st.....	1,826	1.55	"	"	N. J. Asphalt Co.	Aug. 22, 1898	Aug. 22, 1908	3,251.27
Jefferson st....	Ferry st. to Elm st..... Walnut st. to Chestnut st.....	10,411	1.67	"	"	Barber Asp. Co...	Aug. 22, 1898	Aug. 22, 1908	19,351.88
John st.....	State st. to 8th ave.....	908	1.38	"	"	N. J. Asphalt Co.	Sept. 26, 1898	Sept 26, 1908	1,489.36
Lincoln st.....	Mercer st. to Court st.....	1,469	1.55	"	"	" " "	July 25, 1898	July 25, 1908	2,647.88
Lincoln Park.....	Washington st. to Lincoln Park....	‡1,322	1.52	*	"	Barber Asp. Co...	Oct. 31, 1898	Oct. 31, 1908	2,137.42

‡ Over trap rock pavement.

TABLE C, No. 6—CONTINUED.

Streets Paved.	Location.	Square Yards.	Cost per Sq. Yd.	Thickness of Concrete.	Thickness of Asp. Cushion or Binder.	Contractor.	Date of Acceptance.	Expiration of Guarantee.	Cost as per Final Est.
Montgomery st...	High st. to Barclay st.....	4,180	$1.67	6 in.	1½ in. B.	Barber Asp. Co...	July 25, 1898	July 25, 1908	7,663.77
Mt. Prospect ave.	Bloomfield ave. to 6th ave.....	6,552	1.60	"	"	N. J. Asphalt Co.	Sept. 26, 1898	Sept. 26, 1908	11,718.51
Murray st.....	Broad st. to Clinton ave.....	4,489	1.55	"	"	" " "	July 25, 1898	July 25, 1908	7,654.98
Ninth ave.....	Warren st. to S. 14th st.....	6,570	1.68	"	"	At. Al. Asp. Co..	Dec. 31, 1898	Dec. 31, 1908	11,847.44
North Seventh st.	Warren st. to Sussex ave.....	2,150	1.61	"	"	N. J. Asphalt Co.	Dec. 31, 1898	Dec. 31, 1908	3,828.29
Parker st.....	Bloomfield ave. to Fifth ave.....	6,062	1.60	"	"	" " "	Sept. 26, 1898	Sept. 26, 1908	10,827.83
Polk st.....	Ferry st. to Lafayette st.....	2,229	1.39	"	"	Barber Asp. Co...	Sept. 26, 1898	Sept. 26, 1908	3,431.89
Prince st.....	Waverly ave. to W. Kinney st.....	6,480	1.39	"	"	" " ...	Oct. 31, 1898	Oct. 31, 1908	10,191.07
Richmond st.....	13th ave. to Bank st.....	2,309	1.39	"	"	" " ...	Sept. 26, 1898	Sept. 26, 1908	3,669.56
Sidney pl.....	Bank st. to Nelson pl.....	1,046	1.65	"	"	At. Al. Asp. Co..	Nov. 28, 1898	Nov. 28, 1908	2,067.29
Sixth ave.....	Third st. to City Line.....	13,578	1.41	"	"	N. A. P. & C. Co.	Dec. 31, 1898	Dec. 31, 1908	21,340.25
South Seventh st.	Springfield ave. to Warren st.....	24,833	1.64	"	"	N. J. Asphalt Co.	Dec. 31. 1898	Dec. 31, 1908	43,939.52
State st.....	Plane st. to High st.....	2,190	1.38	"	"	" " "	Oct. 31, 1898	Oct. 31, 1908	3,553.04
Stratford pl.....	Clinton ave. to Waverly ave.....	5,035	1.39	"	"	Barber Asp. Co...	Oct. 31, 1898	Oct. 31, 1908	8,153 35
Third ave.....	Mt. Pleasant ave. to Summer ave...	4,834	1.55	"	"	N. J. Asphalt Co.	July 25, 1898	July 25, 1908	8,690.80
Third st.....	Orange st. to Sixth ave.....	6,034	1.55	"	"	" "	Aug. 22, 1898	Aug. 22, 1908	10,317.20
Warren st.....	S. 8th st. to Sussex ave.....	1,535	1.79	"	"	" "	Nov. 28, 1898	Nov. 28, 1908	3,088.11
		154,147							$264,800.53
Clifton ave.....	Seventh ave. to Fifth ave.....	5,636	1.95	"	"	Barber Asp. Co...	Dec. 23, 1899	Dec. 23, 1909	$ 12,478.95
N. Thirteenth st..	Orange st to Sixth ave.....	4,430	1.88	"	"	" " ...	Nov. 27, 1899	Nov. 27, 1909	9,121.87
Rose st.....	Monmouth st. to Somerset st.....	761	1.45	"	"	N. A. P. & C. Co.	Dec. 23, 1899	Dec. 23, 1909	1,219.72
Waverly ave.....	Somerset st. to Barclay st.....	812	1.45	"	"	" "	Dec. 23, 1899	Dec. 23, 1909	1,341.13
		11,639							$ 24,161.67
Bathgate pl.....	Orange st. to Seventh ave.....	1,468	1.89	"	"	Barber Asp. Co...	Aug. 27, 1900	Aug. 27, 1910	3,307.57
Broome st.....	Waverly ave. to W. Kinney st....	6,530	1.90	"	"	" "	Sept. 24, 1900	Sept. 24, 1910	13,872.08
Burnet st.....	Central ave. to Orange st.....	4,250	1.95	"	"	" "	April 30, 1900	April 30, 1910	10,002.06
Charlton st.....	Waverly ave. to Montgomery st.....	5,153	1.93	"	"	John F. Shanley..	July 30, 1900	July 30, 1910	11,329.80
Coes pl.....	Baldwin st. to Coes pl.....	1,780	1.88	"	"	Barber Asp. Co...	May 28, 1900	May 28, 1910	3,674.59
Darcy st.....	Hamburg pl to Magazine st.....	4,947	2.12	"	"	" "	Nov. 26, 1900	Nov. 26, 1910	11,634.12
Dey st.....	Central ave. to Sussex ave.....	1,782	1.89	"	"	" "	Sept. 24 1900	Sept. 24, 1910	3,855.97
Elm st.....	Mulberry st to Pacific st.....	5,726	1.93	"	"	John F. Shanley..	June 25, 1900	June 25, 1910	12,340.40
Elm st.....	Pacific st to Lang st.....	8,828	1 51	"	"	N. A. P. & C. Co.	June 25, 1900	June 25, 1910	15,462.84
Fairmount ave....	15th ave. to Central ave.....	18 367	1.90	"	"	Barber Asp. Co...	Aug. 27, 1900	Aug. 27, 1910	38.535.60

TABLE C, No. 6—CONTINUED.

Streets Paved.	Location.	Square Yards.	Cost per Sq. Yd.	Thickness of Concrete.	Thickness of Asp. Cushion or Binder.	Contractor.	Date of Acceptance.	Expiration of Guarantee.	Cost as per Final Est.
Fifth st.....	Orange st to Fifth ave.....	7,229	$2.11½	6 in.	1½ in. B.	Barber Asp. Co...	Nov. 26, 1900	Nov. 26, 1910	16,968.56
Fillmore st.....	Market st to Passaic ave.....	2,194	2.12	"	"	" "	Oct. 29, 1900	Oct. 29, 1810	5,085.83
Fourth ave.....	Roseville ave. to N. Eleventh st..	2,552	2.11½	"	"	" "	Nov. 26, 1900	Nov. 26, 1910	5,926.89
Gray st.....	Warren st to Seventh ave.....	2,350	2.11½	"	"	" "	Nov. 26, 1900	Nov. 26, 1910	6,091.50
Green st.....	Broad st to Liberty st.....	4,703	1.95	"	"	" "	May 28, 1900	May 28, 1910	11,436.29
Hecker st.....	Orange st. to Sussex ave.....	2,244	2.12	"	"	" "	Nov. 26, 1900	Nov. 26, 1910	5,216.65
Hunterdon st.....	Springfield ave. to Warren st.....	16,808	1.93	"	"	" "	May 28, 1900	May 28, 1910	35,294.27
Jackson st.....	Market st. to Lafayette st.....	6,248	1.89	"	"	" " ...	Sept. 24, 1900	Sept. 24, 1910	13,549.62
Livingston st.....	W. Kinney st. to Waverly ave.....	6,029	1.93	"	"	John F. Shanley..	Aug. 27, 1900	Aug. 27, 1910	13,155.27
Marshall st.....	Broad st to Coes pl.....	3,479	1.88	"	"	Barber Asp. Co...	July 30, 1900	July 30, 1910	8,115.04
Miller st.....	Broad st to Sherman ave.....	3,403	1.89	"	"	" "	Aug. 27, 1900	Aug. 27, 1910	7,522.61
Morton st.....	High st. to Prince st.....	5,278	2.12½	"	"	Met. Asp. P. Co.	Nov. 26, 1900	Nov. 26, 1910	13,378.86
Myrtle ave.....	Sussex ave. to Orange st.....	2,680	2.12	"	"	Barber Asp. Co...	Oct. 29, 1900	Oct. 29, 1910	6,270.22
Nichols st.....	Pacific st. to Jefferson st.....	1,985	1 89	"	"	" "	May 28, 1900	May, 28, 1910	4,145.25
N. Eleventh st....	Orange st. to Sixth ave.....	4,676	2.11½	"	"	" "	Oct. 29, 1900	Oct. 29, 1910	11,075.21
N. Ninth st.....	Seventh ave. to Newbold st.....	11,461	1.95	"	"	" "	Aug. 27, 1900	Aug 27, 1910	24,453.44
N. Sixth st.....	Warren st. to Orange st.....	5,403	1.90	"	"	" "	June 25, 1900	June 25, 1910	11.610.78
Quitman st.....	Clinton ave. to W. Kinney st.....	9,413	1.93	"	"	John F. Shanley..	July 30, 1900	July 30, 1910	20,111.26
Ridgewood ave....	Clinton ave. to Bigelow st.....	4,295	2.11½	"	"	Barber Asp. Co...	Nov. 26, 1900	Nov. 26, 1910	9,930.90
S. Eleventh st..	S. Orange ave. to 13th ave.....	9,895	1.88	"	"	" "	May 28, 1900	May 28, 1910	20,799.64
	Central ave. to Orange st.....								
S. Eleventh st...	12th ave. to 13th ave.....	3,286	2.11	"	"	Met. Asp. P. Co.	Dec. 10, 1900	Dec. 10, 1910	7,592.67
Second st.....	Orange st. to 230 ft. north of 7th av.	2,810	2.11½	"	"	Barber Asp. Co...	Nov. 26, 1900	Nov. 26, 1910	6,850.57
Seventh ave.....	First st. to North 14th st.....	14 416	2.11½	"	"	" "	Dec. 3, 1900	Dec. 3, 1910	35,492.19
S. Ninth st.....	S. Orange ave. to Warren st.....	17,194	1.88	"	"	" "	Oct. 29, 1900	Oct. 29, 1910	35,441.61
S. Thirteenth st..	Central ave. to Warren st.....	6,694	1.93	"	"	John F. Shanley..	June 25, 1900	June 25, 1910	14,310.32
S. Twelfth st....	Central ave. to Warren st.....	6,097	2.12	"	"	Barber Asp. Co...	Oct. 29, 1900	Oct. 29, 1910	14,730.00
Stone st.....	Seventh ave. to Bloomfield ave.....	7,705	2.12	"	"	" "	Oct. 29, 1900	Oct. 29, 1910	18.011.03
Washington ave...	Belleville ave. to City Line.....	31,351	2.06	"	"	Met. Asp. P. Co.	Nov. 26, 1900	Nov. 26, 1910	69,989.54
Wallace st.....	S. Orange ave. to Wallace pl.....	4,559	2.12	"	"	Barber Asp. Co...	Oct. 29, 1900	Oct. 29, 1910	11,137.11
		265,218							$587,708.16
Blum st.....	Springfield ave. to S. Tenth st.....	2,677	1.80	"	"	Barber Asp. Co.	Oct. 28, 1901	Oct. 28, 1911	5,550.00
Brunswick st.....	Pennsylvania ave. to Miller st.....	7,617	1.80	"	"	" "	Oct. 28, 1901	Oct. 28, 1911	15,019.88
Chester ave.....	Summer ave. to Peabody pl.....	5,630	1.92	"	"	" "	July 29, 1901	July 29, 1911	12,462.03
Clayton st.....	West st. to Broome st.....	1.469	1.85	"	"	" "	Dec. 16, 1901	Dec. 16, 1911	3,006.00

TABLE C, No. 6—CONTINUED.

Streets Paved.	Location.	Square Yards.	Cost per Sq. Yd.	Thickness of Concrete.	Thickness of Asp. Cushion or Binder.	Contractor.	Date of Acceptance.	Expiration of Guarantee.	Cost as per Final Est.
Fourth st.....	Orange st. to Sixth ave.....	4,596	1 80	6 in	1½ in. B	Barber Asp. Co...	Nov. 25, 1901	Nov. 25, 1911	9,297.60
Garside st.....	Sixth ave. to Seventh ave.....	3,086	1.92	"	"	" "	Aug. 26, 1901	Aug. 26, 1911	6,452.29
Gillette pl.....	Broad st. to Sherman ave.....	2,154	1 92	"	"	" "	Sept. 30, 1901	Sept. 30, 1911	4,697.82
Halleck st.....	Washington ave. to Summer ave...	4,306	1 80	"	"	" "	Oct. 28, 1901	Oct. 28, 1911	8,880.22
Hampden st.....	Wickliffe st. to Boston st.....	1,003	1 80	"	"	" "	Oct. 28, 1901	Oct. 28, 1911	2,012.21
Hunterdon st.....	Springfield ave. to 18th ave.....	3,866	1.80	"	"	" "	Nov. 25, 1901	Nov. 25, 1911	7.215.47
Milford ave.....	Alpine st. to Elizabeth ave.....	7,181	2.11	"	"	" "	July 1, 1901	July 1, 1911	16,724 85
Milton st.....	Wickliffe st. to Boston st.....	1,007	1.80	"	"	" "	Oct. 28, 1901	Oct. 28, 1911	2,085.94
Monroe st.....	Market st. to Elm st.....	7,926	1.80	"	"	" "	Oct. 28, 1901	Oct. 28, 1911	15,041.46
Mt. Prospect ave.	Sixth ave. to Seventh ave.....	3,288	1 92	"	"	" "	Aug. 26, 1901	Aug. 26, 1911	7,013.89
Orleans st.....	Warren st. to New st.	1,626	1.80	"	"	" "	Oct. 28, 1901	Oct. 28, 1911	3,214.62
Park st.....	Mulberry st. to Cherry st.....	1,317	1.80	"	"	" "	Oct. 28, 1901	Oct. 28, 1911	2,753.09
Second st.....	Warren st. to Orange st.....	7 123	1.80	"	"	" "	Nov. 25, 1901	Nov. 25, 1911	14.033.81
S. Ninth st.....	16th ave. to S. Orange ave.....	6,286	1.80	"	"	" "	Dec. 16, 1901	Dec. 16, 1911	11,927.78
S. Tenth st.....	S. Orange ave. to Central ave.....	10,289	1.80	"	"	" "	Nov. 25, 1901	Nov. 25, 1911	19,748.94
Summer ave.....	Chester ave. to Verona ave.....	21,807	1.92	"	"	" "	Sept. 30, 1901	Sept. 30, 1911	45,785.45
Third st.....	Central ave. to Orange st.....	5,838	1.92	"	"	" "	July 29, 1901	July 29, 1911	12,824 04
Warren pl.....	Warren st. to New st.....	1,317	1.92	"	"	" "	Aug. 26, 1901	Aug. 26, 1911	3,219.11
		111,409							$228,966.50
Camden st.....	Warren st. to 13th ave.....	5,920	1.92½	"	"	Barber Asp. Co...	Nov. 24, 1902	Nov. 24, 1912	13,083.00
Franklin st.....	Broad st. to Mulberry st.....	2,259	1.75	"	"	Essex A. & C. Co.	May 26, 1902	May 26, 1912	4,954.69
Lillie st.....	W. Kinney st. to Waverly ave.....	5,898	1.92½	"	"	Barber Asp. Co...	Oct. 27, 1902	Oct. 27, 1912	12,923.65
Morris ave.....	17th ave. to W. Kinney st.....	20,537	1.93	"	"	" "	Sept. 29, 1902	Sept. 29, 1912	45,049.10
	Springfield ave. to Dickerson st....								
Mott st.....	Market st. to Passaic ave.....	4,041	1.89	"	"	" "	Oct. 27, 1902	Oct. 27, 1912	8,773.61
Pennington st....	N. J. R. R. ave. to Pacific st.....	5,952	1.75	"	"	Essex A. & C. Co.	May 26, 1902	May 26, 1912	11,272.58
School st.....	Wickliffe st. to Wilsey st.....	1.180	1.92½	"	"	Barber Asp. Co...	Nov. 24, 1902	Nov. 24, 1912	2,622 31
S. Eleventh st....	Central ave. to Twelfth ave.....	6,526	1.92½	"	"	" "	Nov. 24, 1902	Nov. 24, 1912	13,883.53
S. Sixth st.....	Twelfth ave. to Thirteenth ave....	2,971	1.92½	"	"	" "	Nov. 24, 1902	Nov. 24, 1912	6,104.58
Wakeman ave....	Arlington ave. to May st.....	1.682	1.89	"	"	" "	July 28, 1902	July 28, 1911	3,531.57
Warren st.....	Halsey st. to Plane st.....	2,760	1.93	"	"	" "	Aug. 25, 1902	Aug. 25, 1911	6,003.63
Washington st....	William st. to Spruce st.....	9,412	2.09	"	"	" "	Dec. 13, 1902	Dec. 13, 1911	23,082.33
		69,138							$151,284.58
Madison st.....	Elm st. to Lafayette st.....	1,432	1.97	"	"	Barber Asp. Co..	Oct. 26, 1903	Oct. 26, 1913	3,197.46
		1,032,896							$2,415,350.57

REMARKS—Camp St., from Broad St. to Orchard St., paved under private contract in 1891, 1,300 square yards.
Neutria St., south of Market St., " " " " " 1900, 210 " "
Library Court, north end, " " " " " 1901, 167 " "
1.677 " "

TABLE C, No. 8—SHOWING STREETS GRADED, CURBED AND FLAGGED.

Name of Street.	Location.	Length in Feet.	Filling Cu. Yds.	Excavation Cu. Yds.	Cost per Yd.	Lineal Ft. 30 x 4 in. Curb.	Cost per Ft.	Sq. Ft. of Flagging.	Width.	Cost per Ft.	Sq. Ft Cross-walks.	Cost per Ft.	Final Estimate.	Total Cost.	Assessment on Property.	Assessment on City.	Contractor.
1900.																	
Morris ave.	Central ave. to Dickerson st.	260	13,820	151	1.15	557	0.45	.86	4	0.15	66	0.45	$482.37	$761.20	$605.14	$156 06	David Harper
S. Nineteenth st.	Springfield ave. to Fourteenth ave.	4,300			0.29	5,668	0.34				1,037	0.59	6,886.23	7,663.80	7 663.80		Alexander Milmoe
Peshine ave.	Clinton ave. to Madison ave.	620		1,200	0.27	892	0.33	5,240	4	0.12½	160	0.60	1,397 87	1,725.00	1,725.00		" "
Cortland st.	Ferry st. to Horatio st.	680	1,678		0.17	1,404	0.35	5,684	4	0.13½	112	0.40	1,613 51	1,889.70	1,714.55	175.15	Van Steenburgh & Clark.
Total		5,860	15,498	1,351		8.521		10,960			1,375		$10.379.98	$12 039 70	$11,708.49	$331.21	
1901.																	
May st.	Lincoln ave. to Summer ave.	580		450	0.55	1,178	0.35	4,748	4	0.13	310	0.40	$1,645 04	$1,983.04	$1,983.04		David Harper
Ridgewood ave.	Clinton ave. to Madison ave.	300	330		0.28	662	0.36	2,656	4	0.13	138	0.38	883.34	1,251.00	1,141.99	$109.01	Robert Doriety
Total		880	330	450		1,840		7,404			448		$2.528.38	$3,234.04	$3,125.03	$109.01	
1902.																	
S. Twelfth st.	Springfield ave. to S. Orange ave.	3,560	10,715		0 30	6,130	0.37	25,340	4	0.14	457	0.39	$9,652 16	$10,574.20	$10,525.52	$48.68	Alexander Milmoe
1903.																	
Brill st.	Ferry st. to Bonnykamper ave.	450	705		0.80	1,033	0.50	4,097	4	0.17	462	0.75	$2,237.56				David Harper
Highland st.	Fairmount ave. to Magnolia st.	260		250	0.28	605	0.48	2,468	4	0.15¼	179	0.44	846.83	$1,189.34	$1,080.30	$109.04	Brown & Rusling
Montclair ave.	Summer ave. to Mt. Prospect ave.	560	1,370		0.72	1,138	0.47	5,970	5	0.18	893	0.55	3,132 01	3,515 16	2,291.11	1,224.05	James Seme
Seventeenth ave.	S. Eighteenth st. to City Line.	540	1,600		0.85	923	0.50				438	0.80	2,225.35				David Harper
S. Seventeenth st.	Springfield ave. to Avon ave.	760	850		0.40	905	0.51	5,875	4	0.16¾	136	0.72	1,964.50				Brown & Rusling
Total		2,570	4,525	250		4,604		18,410			2,108		$10,406.25				
	Grand Total	12,870	31,068	2,051		21,095		62,114			4,388		$32,966.77				

ARLINGTON AVENUE.

Grading, curbing and flagging, from Summer avenue to Woodside avenue, also building a series of stone steps and flagging the walk between them, from Woodside avenue to Mt. Prospect avenue, 1902:

Grading, length in feet	280
Part with Stone Steps, length in feet	220
Excavation, 1,338; cost per cubic yard	$0.60
New 20x4 inch curb, 329; set in Concrete; cost per lineal foot	.70
Old curb reset in Concrete, 200; cost per lineal foot	.25
New 20-inch curb-corners, set in Concrete, 4; cost per set	10.00
Crosswalks, 362; cost per square foot	.70
Flag-stone, 4 feet wide, 1,768; cost per square foot	.13
Flag-stone, 1,679; cost per square foot	.16
Concrete, 90; cost per cubic yard	6.00
Blue-stone steps, 9'x7"x12" in place, 76; cost per step	14.00
Pipe—Iron Railing 1½" diam., in place, 216; cost per lineal foot	2.25
Sodding, 320; cost per square foot	.27
Final estimate	4,175.54
Total cost	4 9 5.8)
Assessment on property	4,648.56
Assessment on city	297.22

Contractor—David Harper.

RE-GRADING, RE-CURBING, RE-FLAGGING AND RE-PAVING, 1902, 1903.

Mulberry st.	Lafayette st. to Mechanic st.	449	$5,335.22*
Hamilton st.	Mulberry st. 205 ft. east	265	729.65*
Ogden st.	Division st. to Cross st.	300	1,972.43
			$8,037.30

*Done under contract for abolishing steam railroad grade crossings.

RE-SURFACING ASPHALT PAVEMENTS, 1902.

Name.	Location.	Length.	Sq. Yds	Cost per Sq Yd.	Final Estimate.
James st.	Wash't'n st. to W. side of Burnet st.	905	3479	$1 58	$5,620 34†
Park pl.	North side of Rector st. for 310 ft. S	310	1330	1.49	2 312 80†
		1215	4809		$7,942 14†

REPAIRING ASPHALT 1902.

Square yards	1015
Cost per square yard	$1.59
Final estimate	$1,690.05†

†Paid out of special appropriation of $10,000 made by Common Council.

REPORT OF

ENGINEER OF DEPARTMENT OF SEWERS AND DRAINAGE.

To the Honorable the Board of Street and Water Commissioners:

GENTLEMEN—I herewith respectfully submit the following report showing the work done under the direction and supervision of this department during the year 1903. I have also added, in order to have the records complete, the statements and tables from the unpublished reports for the three years preceding.

PUBLIC SEWERS, 1903.

During the year twenty-seven (27) contracts were awarded for public sewers, under ordinances passed by your Board. All but four of these were completed during the year and final estimates paid. One contract awarded in 1902 and not completed, was also finished during the past year.

In addition to this, special contracts have been made with the D., L. & W. R. R. Co. and the work nearly completed, by which the Railroad Company agrees to build a sewer in the South Retaining Wall of their cut from the culvert near Duryee street to North Fourteenth street, and in the West Retaining Wall of the Bloomfield Branch, from North Ninth street to North Eleventh street. These sewers serve the double purpose of pro-

viding outlets for the sewers which are cut off by the depression of the tracks, and also in the former case of relieving the Fourteenth Street Sewer, which becomes overcharged in heavy storms.

The total cost of these two improvements, including all appurtenances, will be $44,800.00, of which, according to agreement, one-half or $22,400.00 has already been paid.

The total cost of all public sewer work for the year, as per final estimates and current estimates for December of those contracts not completed, was $108,590.89.

(See tables 1, A, B, C, D.)

PRIVATE SEWERS, 1903.

Fourteen sewers have also been constructed under private contract by consent of the Board and under the supervision of this office, a total length of 8,693 feet, together with 15 basins and 46 manholes.

(See tables 2, A, B, C, D.)

There have also been built during the year under paving contracts 27 basins and 1 manhole. By special order of the Board 5 basins and 1 manhole, and on account of track elevation, 4 basins and 1 manhole.

STATEMENT OF SEWERS AND APPURTENANCES TO JANUARY 1st, 1904.

Total length of Sewers built to January 1st, 1900, as per report for 1899:

	LINEAL FEET.	MILES.
Brick	321,252	60.84
Pipe (public)	423,950	80.30
Pipe (private)	111,747	21.16
Total	856,949	162.30
Total number of Catch Basins		2,579
Total number of Manholes		4,600
Total number of Flush Tanks		39
Total cost	$3,278,827.82	

BUILT DURING 1900.

	LINEAL FEET.	MILES.
Brick	15,009	2.84
Pipe (public)	65,123	12.32
Pipe (private)	3,866	0.73
Total	83,998	15.90
Catch Basins		155
Manholes		429
Flush Tanks		10
Total cost	$207,766.57	

BUILT DURING 1901.

	LINEAL FEET.	MILES.
Brick	6,596	1.25
Pipe (public)	17,301	3.27
Pipe (private)	4,379	0.83
Total	28,276	5.35
Catch Basins		65
Manholes		209
Total cost	$144,569.86	

BUILT DURING 1902.

	LINEAL FEET.	MILES.
Brick	6,614	1.25
Pipe (public)	8,101	1.53
Pipe (private)	3,996	0.76
Total	18,711	3.54
Catch Basins		63
Manholes		125
Total cost	$90,159.84	

BUILT DURING 1903.

	LINEAL FEET.	MILES.
Brick	5,060	0.96
Pipe (public)	47,560	9.00
Pipe (private)	8,693	1.64
Total	61,313	11.60
Catch Basins		109
Manholes		336
Flush Tanks		2
Total cost	$108,590.89	

MAKING A TOTAL TO DATE OF

	LINEAL FEET.	MILES.
Brick	354,531	67.14
Pipe (public)	562,035	106.43
Pipe (private)	132,681	25.12

TOTAL.

	LINEAL FEET.	MILES.
	1,049,247	198.69
*Catch Basins	2,964	
†Manholes	5,721	
†Flush Tanks	29	
‡Total cost	$3,829,914.98	

NOTE.

* Three catch basins built in 1903 replaced three shallow basins previously included in the total number.

Four basins abandoned on account of changes in grade.

† The flush tanks built prior to the year 1899, 22 in number are of an obsolete pattern and have not been in working order for some years. I have therefore recommended that they be abandoned and converted into manholes. In the above summary they have been deducted from the number of flush tanks and added to the number of manholes.

‡ Total cost does not include private sewers or basins or manholes not built under public sewer contract.

In addition to the above there are a large number of small pipe-sewers built by private contract prior to the passage of the ordinance of 1885, no records of which were kept. As far as possible information as to the size, length and depth of these sewers is being obtained and recorded in a book kept for that purpose.

The following tables show the maximum, minimum and average cost of pipe-sewers in 1903, also the average cost of the different sized pipe-sewers for the past seven years. While the cost of each sewer varies with the depth of cut, nature of soil expected, character of pavement, if any, and for other reasons, the average shows a continuous increase up to the present time, owing to the higher cost of labor and materials.

The prices quoted include all Y Branches, but no manholes or other appurtenances.

AVERAGE COST OF PIPE-SEWERS, BASINS AND MANHOLES FOR PAST SEVEN YEARS.

	1897	1898	1899	1900	1901	1902	1903
Eight (8) inch.....	$0.34	$0.28	$0.48	$0.37	$0.49		$0.89
Ten (10) inch.....	0.44	0.55	0.57	0.59	0.65	$0.62	0.97
Twelve (12) inch...	0.48	0.55	0.52	0.72	0.86	0.70	*1.00
Fifteen (15) inch....	0.65	0.79	1 03	0.90	1.01	0.98	1.47
Eighteen (18) inch.	0.79	1.05	0.99	1.05	1.34	1.25	1.77
Twenty (20) inch...	1.05	1.05	1.40	1.65	1.85	1.85	1.75
Twenty-two (22) in.	1.27	1.27	1.80	1.80	2.30		
Twenty-four (24) in.	1.54	2.02	2.09	2.25	2.25	2.35	3.30
Average.....	0.82	0.94	1.11	1.17	1.34	1.29	1.59
Basins.	87.00	83.00	92.00	87.00	101.00	98.00	122.00
Manholes	27.00	29.00	34.00	31.00	37.00	34.00	39.00

MAXIMUM, MINIMUM AND AVERAGE COST OF PIPE-SEWERS, 1903.

SIZE.	MAXIMUM.	MINIMUM.	AVERAGE.
8	$1.00	$0.72	$0.89
10	1.20	0.78	0.97
*12	1.40	0.75	1.00
15	1.95	1.25	1.47
18	1.97	1.50	1.77
20	2.05	1.45	1.75
24	3.30	3.30	3.30

* Twelve (12) inch pipe on Lyons avenue costing $7.00 per foot on account of excessive cut not included in above tables.

INTERCEPTING SEWER.

The following statement shows the amount of sewage and storm water lifted at the pumping station, calculated from the number of strokes of the pistons. Also the amount of coal consumed and ashes removed:

1900.

Total Quantity Pumped.....	4,768,128,152	gals.
Maximum Pumped per day, February 13th.....	26,656,672	"
Minimum Pumped per day, June 8th.....	6,536,690	"
Average Pumped per day.....	13,063,365	"
Coal Consumed	1,430,288	lbs.
Ashes Removed	141,763	"

1901.

Total Quantity Pumped	4,675,390,412	gals.
Maximum Pumped per day, December 29th	30,355,736	"
Minimum Pumped per day, July 10th	4,700,032	"
Average Pumped per day	12,809,286	"
Coal Consumed	1,470,899	lbs.
Ashes Removed	153,546	"

1902.

Total Quantity Pumped	4,726,572,892	gals.
Maximum Pumped per day, February 26th	31,374,816	"
Minimum Pumped per day, July 27th	4,975,096	"
Average Pumped per day	12,949,514	"
Coal Consumed	1,495,604	lbs.
Ashes Removed	157,690	"

1903.

Total Quantity Pumped	4,699,585,970	gals.
Maximum Pumped per day, October 9th	31,882,896	"
Minimum Pumped per day, August 1st	5,529,896	"
Average Pumped per day	12,875,578	"
Coal Consumed	1,697,331	lbs.
Ashes Removed	262,982	"

The quantity pumped each day for the four years is shown graphically in plates A, B, C, and D.

For cost of running the pumping station, see report of the General Superintendent.

JOINT OUTLET SEWER.

This sewer in which Newark is interested, together with several other municipalities, has been so far completed as to permit of connections being made with the Newark Branches. Contracts have been awarded for the three Newark sections connecting with this outlet, and one of these has been entirely finished and is now in use. The completion of this work permits of the sewering of about 265 acres in the westerly section of the city, which heretofore it has been impossible to sewer owing to lack of an outlet.

The total cost of that part of the improvement in which Newark is interested up to the first of January, 1904, from figures furnished by Mr. Alexander Potter, Engineer in charge of the work, has been $465,451.35, of which Newark has paid $65,963.40. There is still due $901.46 to be paid on the expiration of the contractors' guarantee, making the total cost to Newark $66,864.86. This of course does not include the branches now or to be constructed within the city.

RAINFALL OBSERVATION.

The self-registering rain gauge purchased by the city in 1897 continues under the charge of Prof. George C. Sonn, of the Newark Public High School.

For itemized monthly statements of precipitations see tables 3, A, B, C, and D.

The following shows the precipitation per month since these observations were begun:

	1897	1898	1899	1900	1901	1902	1903
January		4.96	4.99	3.69	1.67	2.64	4.26
February		4.33	5.37	5.82	0.69	5.35	4.59
March		3.65	6.62	3.14	4.70	4.96	4.08
April	3.50	4.70	1.76	2.20	6.56	3.57	3.14
May	6.57	6.86	1.63	1.23	5.96	1.54	0.42
June	3.81	3.42	1.06	2.96	1.07	7.10	11.50
July	18.80	3.84	4.70	6.17	4.89	3.04	4.27
August	8.65	4.06	4.90	2.94	11.94	2.09	14.54
September	2.08	1.63	6.18	3.30	1.63	5.05	4.56
October	1.02	7.18	2.54	4.40	2.14	6.65	13.26
November	4.93	7.43	1.78	4.69	1.61	1.12	0.92
December	5.32	3.49	2.32	1.75	7.58	7.37	3.56
Total		55.55	43.85	42.29	50.44	50.48	69.10

The most severe storm of the year and the heaviest since any record has been kept, occurred on October 8th and 9th, when 11.58 inches fell in 27½ hours.

The storm of August 19th, while not of as long duration, was more severe while it lasted, a maximum of 2.45 inches falling in one hour, an exceptional record.

HIGH TIDE OBSERVATIONS.

During the great storm of October 8th and 9th, the Passaic River rose in many places above the docks. In order to preserve the record of the extreme high water, levels were taken at several points along the river and referred to city datum, which is supposed to be ordinary high water. The highest points reached at these places are as follows:

Balbach's Dock	4 ft. 0 in.	above City Datum
Foot of Bridge Street	6 ft. 9 in.	" "
Foot of Third Avenue	8 ft. 9 in.	" "

The field and office force during the year consisted of John A. Schieck, Principal Assistant; James B. Burnett, Jr., Harry D. Franklin, Goline Doremus, Assistants.

Also in connection with the Street Department, George C. Brandley, Arthur U. Schiener, Assistants in office.

Respectfully submitted,

EDWARD S. RANKIN,

Engineer of Department of Sewers and Drainage.

PRIVATE SEWERS, 1900.

Table D 1.

Name.	Location.	Size.	Length	Basins.	M. H's	Cost.	Contractor.	Built For	Soil.
Hinsdale Pl...	Washington to Chester.....	12 in.	947		6	$790.95	James Jeffreys.....	R. Smith Carter.....	Sand and gravel.
Clifton ave ...	Elwood to Bal antine Pkway	15 in.	794			*			
		12 in.	606		8	*	John F. Murray.....	Elias Heller & Prospect Hts. Imp. Association.	
Parker st.....	5th to 6th ave.....	10 in.	335		2	254.49	" "	Henry Kocher.....	Red soil.
S. 15th st.....	14th to S. O. ave.....	8 in.	245		1	185.25	Headley & Christie.....	L. S. Hinckley.	
Oriental Pl...	Ogden st. to Mt. Pleasant ave	8 in.	126		1	111.00	James J. Jeffrey.....	J. H. Worden.....	Gravel.
Sherman ave.	Clifton to Branford.....	12 in.	101			*	John F. Murray.....	D. Toprette..	
7th ave.. ...	East of Bathgate Pl.....	12 in	15						
		10 in.	289	2	3	*	Barber Asphalt Pav. Co..	City of Newark.	
Brinsmaid Pl.	Hawkins to Brill.....	8 in	193		1	*	John F. Murray.....		
N. 9th st.....	South of 4th ave.....	8 in.	135		1		Engelberger.	Paul H. Brangs.	
S. 9th st.....	North of 11th ave	12 in.	80			*	Wm. J. Hughes.....	T. Umbscheiden.	
			3866	2	23				

* No statement.

PRIVATE SEWERS, 1901.

Table D 2.

Name.	Location.	Size.	Length	Basins	M. H's	Cost.	Contractor.	Built For.	Soil.
Halsey st.....	Warren to Cedar.....	10 in.	175		1	*	Harrison Con's' Co	Y. M. C. A.....	Sand and gravel.
Montclair ave.	Mt. Prospect to Ridge.....	12 in.	325		3	$632.50	J. R. Shanley.....	E. A. Geoffroy	Red soil and boulders.
		10 in.	230						
Grafton ave...	" "	12 in.	359						
		10 in.	180		4	*	John F. Murray.....	F. J. Wood.	
Clinton Pl.	Nye ave to Edmunds Pl....	12 in.	171		1	152.50	Headley & Christie.....	Wm. C. Wolf	Sandy.
								Geo. Schmitter.....	Red soil.
2nd ave	Highland to Parker.....	8 in.	158			88.00	" "	Edwin J. Sonn.	" "
14th ave.....	9th to 10th	8 in	124		1	140 00	Ralph B. Schmidt.....	Henry P. Schott.....	" "
9th ave.....	14th to 15th.....	8 in.	221		2	171.00	Headley & Christie.....	John H. Dunn.....	Filling, bog and clay.
Pacific st.....	South to Thomas.....	8 in.	225		1	145.00	James Maguire.....	Wm. E. Poole.....	Filling, clay and sand.
Peshine ave ..	Clinton to Madison.....	12 in.	666		4	574.00	Headley & Christie.....	Geo. F. Crawford.....	Red soil and gravel.
S. 13th st	14th ave to 15th ave.....	12 in.	270		2	378 25	Cameron Plumbing Co ...	H. C. Schneider..	Filling and bog.
Alley.....	West of Mulberry st.....	12 in.	248		2	892.50	Headley & Christie.	Evening News Pub. Co...	Sand.
Halsey st.....	Bank to Market.....	18 in.	444		3	*	Harrison Con's' Co.....	Prudential Ins. Co.	
Brunswick st..	Wright to Miller.....	12 in.	210		1	202 75	Headley & Christie.....	F. N. Utter.....	Gravel.
Hunterdon st.	South of Springfield ave....	12 in.	140		1	*	Chas. Strebinger	Union Brewing Co.....	Sand, gravel and clay.
Lincoln ave...	Carteret to Bryant.....	8 in.	107			87.00	Headley & Christie.....	Julia F. Gertz.....	" " "
Sussex ave ...	7th st. to Roseville ave.....	8 in.	126			119.50	P. Callen.....	Chas. Collyer.	
			4379		26				

* No statement.

PRIVATE SEWERS, 1902.

Table D 3.

Name	Location.	Size.	Length	Basins	M. H's	Cost.	Contractor.	Built For.	Soil.
Ridge st..	Heller Parkway to Grafton	12 in.	580		3	$647.30	John F. Murray.	F. H. Tiplin.....	Gravelly soil.
Chestnut st.....	Jefferson to Pacific.....	12 in.	411		2	335.70	" "	Duranoid M'f'g. Co..	2 feet filling and clay.
Clifton ave.....	Berkeley to Abington.....	10 in.	398		2	455.25	John Doriety.....	Prospect Hts. Imp. Co...	Red soil.
15th ave.....	Bruce to Morris.....	10 in.	246		1	454.00	Wm. J. Hughes.....	Morris Rachlin.....	Clay.
S. Orange av....	11th to 10th	12 in.	92			120 50	" "	George Dill.....	Red soil.
12th ave.....	11th to 10th	10 in.	141		1	*	James Maguire.....	John J. Welch.	" "
17th ave.....	Bergen to Fairmount.....	10 in.	400		3	375.00	Robert Doriety.....	Charles Hayes.....	Clay.
Schley st.....	Nye to Bragaw.....	8 in	225			208.91	John B. Scarlett.....	John B. Scarlett.....	
Library Ct.....	Market to Bank.....	12 in.	200		2	*	James Maguire.....	L. Bamberger.....	Red Soil.
Ridgewood ave.	Madison to Clinton.....	10 in.	280		1	250.00	" "	August Buermann.....	Filling.
Hunterdon st...	Hawthorne to Runyon.....	15 in.	520		4	*	David Olds.....	20th Century L. & I. Co...	Clay and sand, very wet.
Campbell st....	Plane to Washington.....	15 i .	172		1	*	Headley & Christie	Amos H. Van Horn and N. J. Freie Zeitung.	Filling and sand.
Madison ave....	Peshine to Hunterdon	8 in.	142			149.30	Harrison Con's't Co.	Wm. A. Dunn.....	Clay.
5th ave.....	11th to 9th.....	8 in	180		1	*	David Harper	VanWagonen & Bathgate	
			3906		21				

* No statement.

PRIVATE SEWERS, 1903.

Table D 4.

Name.	Location.	Size.	Length	Basins.	M. H's	Cost.	Contractor.	Built For.	Soil.
Central ave....	10th st. to 9th st.....	10 in	125			*	Fred. P. Merkel.....	Fred. P. Merkel	Gravel and sand.
Passaic ave.....	Oxford st. to Lexington st..	15 in	214		2	*	James Maguire.....	Reily.....	Sand, loam and filling.
Badger ave.....	Hawthorne av. to Watson av	12 in.	934		4		Robert Doriety.....		
Peshine ave....	" " " " "	12 in.	862		4		" "		
Jelliff ave.....	" " " " "	12 in.	897		4		" "		
Hawthorne ave.	Badger ave. to Jelliff ave...	12 in.	227		1	*	" "	Parkview L'nd & I'mp. Co.	Hard pan, wet.
Cross st	Broad st. to Spring st.....	12 in.	535	2	4	*		D., L. & W. R. R.....	Sand and gravel.
Parker st...	Grafton ave. to Heller P'y.	10 in.	537		3	$533.00	John Doriety.....	Seymour Tucker.....	Red soil and boulders.
Van Buren st,..	Clifford st. to South st.....	8 in.	166		1	260.30	Murray & Hunkele	John Stobaeus.....	Bull's liver and quicks'nd
Lafayette st....	Merchant st. to Hamburg Pl.....	10 in	200		1	369.08	Headley & Christie.....	Hugo J. Geisele.....	Sand.
Branford Pl....	Halsey st. to Broad st.....	15 in.	340	1	3		" "	New City Hall Com.....	Red soil.
Millington ave.	Nairn Pl. to Clinton Pl.....	18 in.	325						
		10 in	90	1	3	918.00	John Doriety.....	Joseph C. Dunn.....	Wet.
Ashbridge st...	Ferry st. to Darcy st.....	20 in.	594	3	4	*	Harrison Con. Co	Celluloid Co.....	Sand.
Berkeley ave...	Lake st. to Clifton ave.....	18 in.	263						
	*	12 in.	260						
		15 in.	253						
		10 in.	116	6	4				
Ridge st.....	Ballantine P'way to Abington ave.....	12 in	862		4				
Parker st.	Ballantine P'way to Berkeley ave....	12 in.	437		2	2,510.93	John F. Murray.....	Z. M. Keen, et. al.....	
Clifton ave.....	Abington ave to South..	10 in.	337		1	375.00	" "	H. Van Duyne.....	
South st...	Across N. J. R. R. ave.....		119	2	1		P. R. R.....	P. R. R.....	Sand.
			8093	15	46				

* No statement.



PRIVATE SEWERS, 1903.

Table D 4.

Name.	Location.	Size.	Length	Basins.	M. H's	Cost.	Contractor.	Built For.	Soil.
Central ave....	10th st. to 9th st.....	10 in	125			*	Fred. P. Merkel.....	Fred. P. Merkel	Gravel and sand.
Passaic ave.....	Oxford st. to Lexington st..	15 in	214		2	*	James Maguire.....	Reily.....	Sand, loam and filling.
Badger ave.....	Hawthorne av. to Watson av	12 in.	934		4		Robert Doriety.....		
Peshine ave....	" " " " "	12 in.	862		4		" "		
Jelliff ave.....	" " " " "	12 in.	897		4		" "		
Hawthorne ave.	Badger ave. to Jelliff ave...	12 in.	227		1	*	" "	Parkview L'nd & I'mp. Co.	Hard pan, wet.
Cross st	Broad st. to Spring st.....	12 in.	535	2	4	*		D., L. & W. R. R.....	Sand and gravel.
Parker st...	Grafton ave. to Heller P'y.	10 in.	537		3	$533.00	John Doriety.....	Seymour Tucker.....	Red soil and boulders.
Van Buren st...	Clifford st. to South st.....	8 in.	166		1	260.30	Murray & Hunkele	John Stobaeus.....	Bull's liver and quicks'nd
Lafayette st....	Merchant st. to Hamburg Pl.....	10 in	200		1	369.08	Headley & Christie.....	Hugo J. Geisele.....	Sand.
Branford Pl.....	Halsey st. to Broad st.....	15 in.	340	1	3		" "	New City Hall Com.....	Red soil.
Millington ave.	Nairn Pl. to Clinton Pl.....	18 in	325						
		10 in	90	1	3	918.00	John Doriety.....	Joseph C. Dunn.....	Wet.
Ashbridge st...	Ferry st. to Darcy st.....	20 in.	594	3	4	*	Harrison Con. Co ...	Celluloid Co.....	Sand.
Berkeley ave...	Lake st. to Clifton ave.....	18 in.	263						
		12 in.	260						
		15 in.	253						
		10 in.	116	6	4				
Ridge st.....	Ballantine P'way to Abington ave.....	12 in	862		4				
Parker st.....	Ballantine P'way to Berkeley ave.....	12 in.	437		2	2,510.93	John F. Murray.....	Z. M. Keen, et. al.....	
Clifton ave.....	Abington ave to South.,	10 in.	337		1	375.00	" "	H. Van Duyne.....	
South st...	Across N. J. R. R. ave.....		119	2	1		P. R. R.....	P. R. R.....	Sand.
			8698	15	46				

* No statement.



PRIVATE SEWERS, 1901.

Table D 2.

Name.	Location.	Size.	Length	Basins	M. H's	Cost.	Contractor.	Built For.	Soil.
Halsey st.....	Warren to Cedar.....	10 in.	175		1	*	Harrison Con's' Co	Y. M. C. A.....	Sand and gravel.
Montclair ave.	Mt. Prospect to Ridge.....	12 in.	325						
		10 in.	230		3	$632.50	J. R. Shanley.....	E A. Geoffroy	Red soil and boulders.
Grafton ave...	" "	12 in.	359						
		10 in.	180		4	*	John F. Murray.....	F. J. Wood.	
Clinton Pl. ...	Nye ave to Edmunds Pl....	12 in.	171		1	152.50	Headley & Christie.....	Wm. C. Wolf	Sandy.
								Geo. Schmitter.....	Red soil.
2nd ave	Highland to Parker.....	8 in.	158			88 00	" "	Edwin J. Sonn.	" "
14th ave.....	9th to 10th	8 in.	124		1	140 00	Ralph B. Schmidt.....	Henry P. Schott.....	" "
9th ave.....	14th to 15th.....	8 in.	221		2	171.00	Headley & Christie.....	John H. Dunn.....	Filling, bog and clay.
Pacific st.....	South to Thomas.....	8 in.	225		1	145.00	James Maguire.....	Wm. E. Poole.....	Filling, clay and sand.
Peshine ave...	Clinton to Madison.....	12 in.	666		4	574.00	Headley & Christie.....	Geo. F. Crawford.....	Red soil and gravel.
S. 13th st	14th ave to 15th ave.....	12 in.	270		2	378 25	Cameron Plumbing Co	H. C. Schneider..	Filling and bog.
Alley.....	West of Mulberry st.....	12 in.	248		2	892.50	Headley & Christie.	Evening News Pub. Co...	Sand.
Halsey st.....	Bank to Market.....	18 in.	444		3	*	Harrison Con's' Co.....	Prudential Ins. Co.	
Brunswick st..	Wright to Miller.....	12 in.	210		1	202 75	Headley & Christie.....	F. N. Utter.....	Gravel.
Hunterdon st.	South of Springfield ave....	12 in.	140		1	*	Chas. Strelbinger	Union Brewing Co.....	Sand, gravel and clay.
Lincoln ave...	Carteret to Bryant.....	8 in.	107			87.00	Headley & Christie.....	Julia F. Gertz.....	" " "
Sussex ave ...	7th st. to Roseville ave.....	8 in.	126			119.50	P. Callen.....	Chas. Collyer.	
			4379		26				

* No statement.

PRIVATE SEWERS, 1902.

Table D 3.

Name	Location.	Size.	Length	Basins	M. H's	Cost.	Contractor.	Built For.	Soil.
Ridge st.	Heller Parkway to Grafton	12 in.	580		3	$647.30	John F. Murray.	F. H. Tiplin.	Gravelly soil.
Chestnut st	Jefferson to Pacific	12 in.	411		2	335.70	" "	Duranoid M'f'g. Co.	2 feet filling and clay.
Clifton ave	Berkeley to Abington	10 in.	398		2	455.25	John Doriety	Prospect Hts. Imp. Co.	Red soil.
15th ave	Bruce to Morris	10 in.	246		1	454.00	Wm. J. Hughes	Morris Rachlin	Clay.
S. Orange av	11th to 10th	12 in.	92			120 50	" "	George Dill	Red soil.
12th ave	11th to 10th	10 in.	141		1	*	James Maguire	John J. Welch.	" "
17th ave	Bergen to Fairmount	10 in.	400		3	375.00	Robert Doriety	Charles Hayes	Clay.
Schley st	Nye to Bragaw	8 in	225			208.91	John B. Scarlett	John B. Scarlett	
Library Ct	Market to Bank	12 in.	200		2	*	James Maguire	L. Bamberger	Red Soil.
Ridgewood ave	Madison to Clinton	10 in.	289		1	250.00	" "	August Buermann	Filling.
Hunterdon st	Hawthorne to Runyon	15 in.	520		4	*	David Olds	20th Century L. & I. Co.	Clay and sand, very wet.
Campbell st	Plane to Washington	15 in.	172		1	*	Headley & Christie	Amos H. Van Horn and N. J. Freie Zeitung	Filling and sand.
Madison ave	Peshine to Hunterdon	8 in.	142			149.30	Harrison Con's't Co.	Wm. A. Dunn	Clay.
5th ave	11th to 9th	8 in	180		1	*	David Harper	VanWagonen & Bathgate	
			3996		21				

* No statement.

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

February, 1900. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 6

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4	4.13 p m												
5		4.00 a m							1.66		E	45	
6													
7													
8	6.22 a m	10.30 p m	0.02	10.00 a m	0.03	10.00 a m	0 10	10.00 a m	0.48		N E	15	
9	5.15 a m	5.15 a m	0.01	5.15 a m	0.01	5.15 a m	0.01	5.15 a m	0.01		N	40	
10													
11													
12	6.10 p m												
13		4.00 p m							2.22		S E	30	
14													
15													
16													
17	1.00 a m												
18		1.15 a m							0.85	13.00	N	35	Snow and rain
19													
20													
21	9.00 p m												
22		11.30 p m							0.45		S E	60	
23													
24	8.10 p m												
25		2.30 a m							0 15	1.00	S E	30	Snow and rain
26													
27													
28													
									5.82				



DAY OF MONTH.	BEGINNING.	ENDING.	Max. in 5 min. in Inches.	BEGINNING.	Max. in 10 min. in Inches.	BEGINNING.	Max. in 1 hour in Inches.	BEGINNING.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	MISCELLANEOUS.
1	4.00 a m	9.00 a m							0.01		N N W	10	
2													
3													
4													
5													
6													
7													
8													
9													
10													
11	3.10 p m	5.00 a m							1.81				
12													
13													
14	11.55 a m	5.00 p m							0.08		S E	12	
15													
16	9.30 a m	9.50 a m							0.01		N W	24	
17													
18	10.55 p m	12.00 p m							0.13		N W	5	Showers
19	12.00 a m	12.00 p m							1.53		S W	20	
20	12.00 a m	3.00 a m							0.05		N W	30	
21													
22													
23													
24													
25	7.53 a m	8.04 a m	0.02	7.53 a m	0.02	7.53 a m	0.04		0.04		N N E	8	
26	9.03 p m	11.28 p m	0.01	9.03 p m	0.02	9.03 p m	0.06		0.06		S W	10	
27													
28													
29													
30													
31													
									3.09				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET.

February, 1900.

Table D 6

Day of Month.	Beginning.	Ending.	Max. in 5 m'n. in Inches.	Beginning.	Max. in 10 m'n. in Inch s	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4	1.13 p m	4.00 a m									E	45	
5													
6													
7													
8	6.22 a m	10.30 p m	0.02	10.00 a m	0.03	10.00 a m	0 10	10.00 a m	1.66		N E	15	
9	5.15 a m	5.15 a m	0.01	5.15 a m	0.01	5.15 a m	0.01	5.15 a m	0.48		N	40	
10									0.01				
11													
12	6.10 p m	4.00 p m							2.22		S E	30	
13													
14													
15													
16	1.00 a m	1.15 a m							0.85	13.00	N	35	Snow and rain
17													
18													
19													
20													
21	9.00 p m	11.30 p m							0.45		S E	60	
22													
23													
24	8.10 p m	2.30 a m							0 15	1.00	S E	80	Snow and rain
25													
26													
27													
28									5.82				

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4	1.20 p m	2.15 p m							0.13		W	50	Thunder storm—automatic not working
5	12.20 a m	10.45 p m	0.22	12.25 a m	0.42	12.25 a m	0.94	12.20 a m	1.09				Thunder storm
6	1.55 p m	8.55 p m	0.09	7.03 p m	0.16	6.57 p m	0.27	6.50 p m	0.33		Var'b	24	Thunder storm
7	5.25 p m	7.30 p m	0.01	5.25					0.04		S W	40	Thunder storm
8	2.20 p m								Trace		W S W	20	
9	5.30 p m	7.00 p m							0.02		W S W	20	
10													
11													
12	4.20 p m	7.30 p m							0.28		S	50	Thunder storm—automatic not working
13													
14													
15	8.50 p m								Trace		S	24	Thunder storm
16													
17													
18													
19													
20													
21	4.20 a m	7.10 a m							0.82		S E	20	Thunder storm—automatic not working
22	7.25 p m	7.50 p m	0.16	7.25 p m	0.26	7.30 p m	0.35	7.25 p m	0.38		S E	20	Thunder storm
23	4.30	9.20							0.01				
24													
25	7.50 p m										S	30	
26		3.00 p m	0.07	8.12 a m	0.14	8.09 a m	0.30	8.09 a m	1.79		N	12	Thunder storm
27													
28													
29													
30	10.00 a m	3.25 p m	0.15	1.42 p m	0.25	12.33 p m	0.65	12.32 p m	1.28		S E	20	
31													
									6 17				

January, 1900. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 5.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	4.00 a m	9.00 a m							0.01		N N W	10	
10													
11	3.10 p m												
12		5.00 a m							1.81				
13													
14	11 55 a m	5.00 p m							0.03		S E	12	
15													
16	9.30 a m	9.50 a m							0.01		N W	24	
17													
18													
19	10.55 p m	12.00 p m							0.13		N W	5	
20	12.00 a m	12.00 p m							1.53		S W	20	Showers
21	12.00 a m	3.00 a m							0.05		N W	30	
22													
23													
24													
25	7.53 a m	8.08 a m	0.02	7.53 a m	0.03	7.53 a m	0.04		0.04		N N E	8	
26	9.03 p m	11.28 p m	0.01	9.03 p m	0.02	9.03 p m	0.06		0.08		S W	10	
27													
28													
29													
30													
31													
									3.09				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

February, 1900. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 6

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4	4.13 p m												
5		4 00 a m							1.66		E	45	
6													
7													
8	6.22 a m	10.30 p m	0.02	10.00 a m	0.03	10.00 a m	0 10	10.00 a m	0.48		N E	15	
9	5.15 a m	5.15 a m	0.01	5.15 a m	0.01	5.15 a m	0.01	5.15 a m	0.01		N	40	
10													
11													
12	6.10 p m												
13		4.00 p m							2.22		S E	30	
14													
15													
16													
17	1.00 a m												
18		1.15 a m							0.85	13.00	N	35	Snow and rain
19													
20													
21	9.00 p m												
22		11.30 p m							0.45		S E	60	
23													
24	8.10 p m												
25		2.30 a m							0 15	1.00	S E	30	Snow and rain
26													
27													
28													
									5.82				

November, 1900. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	5.00 p m	8.00 p m							0.02		N E	12	
2	12.00 a m	3.00 a m							0.01		S W	6	Light showers
3	6.00 a m	5.00 p m							0.24		N N W	6	Showers
4													
5													
6													
7	9.14 p m												
8	8.40 p m	12.30 a m							1.03		S E	15	
9		7.00 a m							0.39		W	15	
10													
11													
12													
13													
14													
15													
16													
17													
18													
19	11.00 p m												
20		6.00 a m							0.08		S W	15	Light showers
21	4.00 p m	4.30 p m							0.30		S W	55	Heavy wind storm
22													
23													
24	7.00 a m	9.00 p m							0.22		N	15	Showery
25	6.00 a m	12.00 p m							0.90		N E	20	
26	12.00 a m	10.00 a m							1.50		N E	20	
27													
28													
29	3.00 p m								Trace				Light sprinkles
30													
									4.69				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

April, 1900. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 3.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3									0.02		N W	30	
4													
5													
6													
7													
8													
9													
10													
11													
12	12.45 a m	8.00 p m							0.66		N E	15	
13													
14													
15													
16													
17	6.30 a m												
		6.00 a m	0.03	4.55 a m	0.07	4.55 a m	0.15	4.10 a m	0.72		S E	15	
18	12.40 a m	10.22 a m	0.05	10.22 a m	0.08	10.22 a m	0.13						
		6.41 a m						4.35 a m	0.67		S E	15	Several sudden showers
19													
20													
21	9.05 p m	11.45 p m	0.01	9.05 p m	0.01	9.05 p m	0.02	9.05 p m	0.05		S E	15	
22	12.60 a m	1.56 a m	0.01	12.01 a m	0.01	12.01 a m	0.03	12.01 a m	0.04		S	12	
23	2.00 p m	2.50 p m							0.04		E	6	Thunder storm
24													
25													
26													
27													
28													
29													
30													
									2.20				

Day of Month	Beginning	Ending	Max. in 5 m in Inches	Beginning	Max. in 10 m in Inches	Beginning	Max. in 1 h in Inches	Am't of Rain Melted Sn in Inches	Depth of S in Inches	Gen'l Direc of Wind	Max. Velo of Wind	Miscellaneous.
1	5.42 p m	11.05 p m	0.05	5.40 p m	0.07	5.40 p m	0.17	0.30		N W	20	
2	11.37 p m	11.47 p m	0.01	11.37 p m	0.08	11.37 p m	0.08	0.08		S E	24	
3												
4												
5												
6												
7	9.53 p m	11.37 p m	0.10	9.53 p m	0.10	9.53 p m	0.14	0.15		E	20	
8												
9												
10												
11												
12	4.15 a m	8.10 a m	0.02	4.15 a m	0.03	4.15 a m	0.06	0.08		S W	8	
13												
14												
15	6.11 p m	9.30 p m	0.02	9.15 p m	0.02	9.15 p m	0.04	0.05		W S W	15	
16												
17	1.04 a m	4.55 a m	0.10	1.58 a m	0.20	1.58 a m	0.37	0.47		S E	10	Thunder storm
18	11.00 a m	8.42 p m						0.00		S E	12	
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Month								1.23				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

February, 1901. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 18.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inch's.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3	8.30 p m	12.00 p m							0.15		E	10	Melted snow
4	12.00 a m	8.50 p m							0.36		N W	40	Melted snow
5													
6													
7													
8													
9	8.20 a m	3.00 p m							0.07		N E	30	Melted snow
10													
11													
12													
13													
14													
15													
16													
17													
18	2.00 a m	5.00 a m							0.09		W	15	Melted snow
19													
20													
21													
22	5.00 p m	7.00 p m							0.01		S W	24	Melted snow
23													
24	12.15 a m	1.30 a m							0.01		W	30	Melted snow
25													
26													
27													
28													
									0.69				

March, 1901. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 19.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	10.00 a m	4.00 p m							0.02		S W	30	Rain and melted snow
2													
3													
4	7.00 p m	12.00 p m							0.19		S E	15	
5													
6													
7													
8													
9													
10	7.00 p m												
11		9.00 p m							2.27		N E	25	
12													
13													
14	6.20 p m	12.00 p m							0.10		N E	15	
15	1.00 a m	6.00 a m							0.09		N E	7	Rain and melted snow
16													
17	7.00 p m	7.15 p m							Trace		S W	24	
18													
19													
20	6.50 a m	12.00 p m							0.16		N E	20	
21	12.00 a m	9.15 a m							1.13		W	12	
22													
23													
24	6.00 a m	3.00 p m							0.15		N E	8	
25	6.45 p m	12.00 p m							0.26		N E	12	Thunder storm
26	12.00 a m	2.30 a m							0.06		N		
27	2.15 p m	11.00 p m							0.24		N E	20	Thunder storm
28													
29													
30													
31													
									4.70				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

August, 1900. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 12.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4													
5													
6	5.50 p m	6.10 p m							0.01		S S W	30	
7													
8	7.50 p m	8.20 p m	0.02	7.50 p m	0.02	7.50 p m	0.03	7.50 p m	0.08		S E	30	Thunder storm
9													
10													
11													
12	1.45 p m	9.00 p m	0.15	1.55 p m	0.25	1.50 p m	0.39	1.45 p m	0.78		Var'b	60	Thunder storm
13	5.20 p m	6.05 p m	0.15	5.47 p m	0.26	5.45 p m	0.52	5.20 p m	0.58		E	20	
14													
15													
16	1.30 a m	6 45 a m							0.26		W	20	Automatic not working
17													
18	5.45 p m	5.45 p m							0.01		S E	12	
19													
20	Various								Trace				Light sprinkles
21	Various								Trace				" "
22	Various								Trace				" "
23													
24	2.47 a m	9.12 p m	0.20	5.57 a m	0.35	5.55 a m	0.50	5 05 a m	1.01		E	20	Thunder storms
25													
26	1.35 p m	1.46 p m	0 10	1.37 p m	0.20	1.35 p m	0.21	1.35 p m	0.21		S W	40	Thunder storm
27	Various								Trace				Light sprinkles
28													
29	Various								Trace				" "
30													
31													
									2.94				

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direction of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4													
5													
6	9.45 p m	1.10 a m	0.07	10.37 p m	0.13	10.35 p m	0.25	10.00 p m	0.87		S S W	38	Thunder storm
7	5.25 p m	5.40 p m	0.05	5.30 p m	0.12	5.35 p m	0.14	5.25 p m	0.14		E	24	
8	6.17 p m	6.17 p m							0.01		E	20	
9													
10													
11													
12													
13													
14													
15													
16	8.45 p m	7.10 a m							2.05		N E	24	
17													
18													
19													
20	5.20 a m	5.20 a m							0.01		S W	16	
21													
22													
23													
24													
25													
26	4.45 a m								0.01		N E	8	
27	11.10 p m	5.00 p m							0.71		S E	15	
28													
29													
30									3.90				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

October, 1900. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 14.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3	5.05 a m								0.01		N E	8	
4													
5	7.00 a m								0.01		S W	12	
6													
7	5.00 a m	9.00 p m							0 02		N E	12	
8	5.00 a m		0.35	3.10 p m	0.65	3.10 p m	1.39	3.10 p m	2.41		N W	20	Thunder storm at 2.55 p m
9		3 00 p m											
10													
11													
12													
13	6.20 p m												
14		8.00 p m							1 49		N E	24	
15													
16	3.50 p m	5.30 p m							0.06		N W	72	
17													
18													
19													
20													
21													
22													
23	8.20 p m	12.00 p m							0.26		S E	15	
24													
25													
26													
27	4.00 a m	9.00 p m							0.07		N E	8	
28													
29													
30	6.00 p m	10.00 p m							0.07		N N E	20	
31													
									4.40				

November, 1900. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 15.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	5.00 p m	8.00 p m							0.02		N E	12	
2	12.00 a m	3.00 a m							0.01		S W	6	Light showers
3	6.00 a m	5.00 p m							0.24		N N W	6	Showers
4													
5													
6													
7	9.14 p m												
8	8 40 p m	12.30 a m							1.03		S E	15	
9		7.00 a m							0.39		W	15	
10													
11													
12													
13													
14													
15													
16													
17													
18													
19	11.00 p m												
20		6.00 a m							0.08		S W	15	Light showers
21	4.00 p m	4.30 p m							0.30		S W	55	Heavy wind storm
22													
23													
24	7.00 a m	9.00 p m							0.22		N	15	Showery
25	6.00 a m	12.00 p m							0.90		N E	20	
26	12.00 a m	10.00 a m							1.50		N E	20	
27													
28													
29	3.00 p m								Trace				Light sprinkles
30													
									4.69				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

December, 1900. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 16

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4	4.00 a m	10.00 p m							0.94		E	50	
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23	4.00 p m	10.00 p m							0.08		S	12	
24													
25													
26													
27													
28	7.35 a m	11.00 a m							0.08		W	30	Snow and rain
29													
30	6.30 p m	12.00 p m							0.40		S	10	
31	12.00 a m	9.00 a m							0.80		N N W	15	
									1.70				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

January, 1901. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. **Table D 17.**

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4													
5													
6													
7													
8													
9													
10	11.00 a m	12.00 p m							0.20		N E	5	
11	12.00 a m	12.00 p m							0.84		N E	15	
12	12.00 a m	6.45 a m							0.42		S W	15	
13													
14	9.00 p m	11.00 p m							0.01		S W	10	Melted snow
15													
16													
17	3.40 p m	11.00 p m							0.03		N W	20	Melted snow
18													
19	5.00 a m	11.30 a m							0.02		N W	30	Melted snow
20													
21													
22													
23													
24													
25	3.30 a m	10.35 a m							0.04		N W	25	Rain and melted snow
26													
27													
28													
29													
30	9.40 a m	12.00 p m							0.00		N E	15	Melted snow
31	12.00 a m	7.00 a m							0.02		W	15	Melted snow
									1.67				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

February, 1901. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 18.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inch's.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3	8.20 p m	12.00 p m							0.15		E	10	Melted snow
4	12.00 a m	8.50 p m							0.36		N W	40	Melted snow
5													
6													
7													
8													
9	8.20 a m	3.00 p m							0.07		N E	30	Melted snow
10													
11													
12													
13													
14													
15													
16													
17													
18	2.00 a m	5.00 a m							0.09		W	15	Melted snow
19													
20													
21													
22	5.00 p m	7.00 p m							0.01		S W	24	Melted snow
23													
24	12.15 a m	1.30 a m							0.01		W	30	Melted snow
25													
26													
27													
28													
									0.69				

DAY OF MONTH.	BEGINNING.	ENDING.	Max. in 5 min in Inches.	BEGINNING.	Max. in 10 min in Inches.	BEGINNING.	Max. in 1 hour in Inches.	BEGINNING.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	MISCELLANEOUS.
1	10.00 a m	4.00 p m							0.08		S W	30	Rain and melted snow
2													
3	7.00 p m	12.00 p m							0.19		S E	15	
4													
5													
6													
7													
8													
9	7.00 p m	9.00 p m							2.27		N E	25	
10													
11													
12													
13													
14	6.20 p m	12.00 p m							0.10		N E	15	Rain and melted snow
15	1.00 a m	6.00 a m							0.09		N E	7	
16													
17	7.00 p m	7.15 p m							Trace		S W	24	
18													
19													
20	6.50 a m	12.00 p m							0.16		N E	30	
21	12.00 a m	9.15 a m							1.13		W	12	
22													
23													
24	6.00 a m	8.00 p m							0.15		N E	8	Thunder storm
25	6.45 p m	12.00 p m							0.06		N E	12	
26	12.00 a m	2.30 a m							0.06		N		
27	2.15 p m	11.00 p m							0.94		N E	30	Thunder storm
28													
29													
30													
31													
									4.70				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

December, 1901. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 28.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3	7.25 a m	11.30 p m							1.12		N E	30	Rain and melted snow
4													
5													
6													
7													
8													
9													
10	3.00 a m	6.30 a m							0.44		S W	24	
11													
12													
13													
14	10.15 a m	12.00 p m							0.06		S E	40	
15	12.15 a m	7.00 a m							0.92		N W	60	
16													
17													
18													
19													
20													
21													
22													
23	1.50 p m	10.00 p m							0.22		S E	10	Rain and melted snow
24													
25													
26	3.40 p m	12.00 p m							0.77		N E	12	Hail, snow and rain.
27	12.00 a m	7.15 a m							0.38		N W	35	
28	9.00 p m	12.00 p m							0.40		N E	10	
29	12.00 a m	12.00 p m							2.62		S E	10	
30	12.00 a m	12.00 p m							0.65		N E	20	
31													
									7.58				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

May, 1901. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. **Table D 21.**

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	5.00 a m	7.40 a m							0.04		N W	15	
2	6.50 p m												
3		3.00 a m							0.28		S E	60	Thunder storm
4													
5													
6													
7													
8	2.20 p m	4.30 p m							0.01		E	15	
9	6.50 a m	6.00 p m							0.86		N E	15	
10	5.10 a m	9.00 p m							1.36		N E	15	
11	12.00 a m	2.00 a m							0.04		S W	4	
	5.35 p m	6.10 p m							0.02		S W	10	
12	12 15 a m	2.00 a m							0.07		W	8	
13	3 30 a m	5 20 a m							0.12		S W	3	
14													
15													
16													
17													
18	1.25 a m	2.00 p m							0.37		S E	10	
19	7.00 a m	7.00 p m							0.01		N E	15	Light showers.
20													
21													
22	7.42 p m	11.30 p m							0.12		S E	15	
23													
24	7.30 p m	9 00 p m							0 23		S W	50	
25	1.45 a m	8.00 p m							0.68		N E	20	
26	8.00 p m	11.00 p m							0.06		N E	15	
27	3.00 a m	9.00 p m							0.87		N E	15	
28													
29	1.50 a m												
30		1.00 a m							0.76		N E	20	
31	1.10 p m	1.30 p m							0.05		S E	12	*Total correct.
									5 96*				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

June, 1901 — ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. — Table D 22

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	8.00 p m	10.00 p m	0.05	8.35 p m	0.09	8.35 p m	0.20	8.00 p m	0.23		S E	4	
2	8.48 p m	10.00 p m	0.04	9.00 p m	0.07	9.00 p m	0.22	9.00 p m	0.24		S E	20	Thunder storm
3													
4													
5													
6													
7	7.50 a m	12.00 a m							0.02		S E	8	
8	12.30 p m	5.00 p m	0.10	1.00 p m	0.17	1.00 p m	0.32	1.00 p m	0.48		W	20	Thunder storm
9													
10													
11													
12													
13													
14													
15	7.00 a m	8.00 a m							0.01		E	5	
16													
17													
18													
19													
20													
21													
22	2.20 a m	2.40 a m							0.01		E	5	
23	5.10 p m	11.10 p m							0.06		S W	24	Thunder storm
24													
25													
26													
27													
28													
29													
30													
									1.07				

Table D 23.

July, 1901. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1												
2	7.10 p m	7.35 p m						0.07		S W	45	Thunder storm
3	1.30 p m	5.50 p m						0.46		S W	24	Thunder storm
4												
5	2.40 p m	7.00 p m						0.40		E	30	Thunder storm
6	3.10 p m	11.15 p m						1.02		E	30	Thunder storm
7	6.10 p m	7.40 p m						0.08		S W	30	Thunder storm
8	11.00 a m	11.30 a m						0.05		E	8	
9	12.50 p m	5.00 p m						0.07		E	15	
10												
11	8.35 p m	9.55 p m						0.13		S E	20	
12	1.00 a m	10.00 p m						0.42		N E	30	
13												
14	3.00 a m	8.00 a m						0.28		E	10	
15	2.30 p m	3.00 p m						0.02		S W	15	
16	7.42 p m	7.55 p m						0.13		S	20	Thunder storm
17	4.35 p m	9.05 p m						0.37		S W	30	Thunder storm
18												
19												
20												
21												
22												
23												
24												
25	6.47 a m	8.30 p m						0.11		N E	12	Thunder storm
26												
27	10.52 p m	11.30 p m						0.09		S W	30	Three thunder storms
28	3.15 a m	11.00 p m						0.29		E	20	Thunder storm
29	12.30 a m	1.30 a m						0.03		S E	10	Thunder storm
30	8.58 a m	9.20 a m						0.87		S W	24	Thunder storm
31												
								4.80				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

April, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 32.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	1.35 a m	2.00 a m							0.01		S W	12	Snow flurries
2													
3													
4													
5													
6	2.40 p m												
7		2.00 a m							0 81		N E	30	
8	12.00 a m	9.40 p m							1.51		N E	65	Thunder storm at 9.30 a m
9	11.45 a m	1.00 p m							0.06		E	12	
10	6.40 a m	7.50 a m							0.02		N	6	
11													
12	11.00 p m								0.01		W	7	
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26	3.30 a m	6.00 a m							0.09		S E	10	Thunder storm
27													
28													
29	4.30 p m												
30		5.45 a m							1 06		S W	15	
									3 57				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

September, 1901. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. **Table D 25.**

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	12.00 a m	5.10 a m							0.14		N	8	
2	7.40 a m	8.20 a m							0.02		N	8	
3													
4													
5													
6													
7													
8													
9													
10	7.35 p m	12.00 p m							0.42		N W	8	
11													
12	1.10 p m	1.30 p m							0.08		S E	10	
13	6.50 p m	11.10 p m							0.18		S E	10	
14													
15	6.00 p m	7.30 p m							0.05		S W	12	Thunder storm
16													
17	6.50 a m	5.00 p m							0.03		W	50	
18	7.00 a m	10.00 a m							0.01		E	8	
19													
20	11.00 a m	5.30 p m							0.02		N E	15	
21													
22													
23													
24													
25													
26													
27													
28	9.40 p m	12.00 p m							0.12		E	15	
29	12.00 a m	12.00 p m							0.50		S	15	
30	12.00 a m	1.00 a m							0.06		W	30	
									1.63				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

April, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 32.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	1.35 a m	2.00 a m							0.01		S W	12	Snow flurries
2													
3													
4													
5													
6	2.40 p m												
7		2.00 a m							0 81		N E	30	
8	12.00 a m	9.40 p m							1.51		N E	65	Thunder storm at 9.30 a m
9	11.45 a m	1.00 p m							0.06		E	12	
10	6.40 a m	7.50 a m							0.02		N	6	
11													
12	11.00 p m								0.01		W	7	
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26	3.30 a m	6.00 a m							0.09		S E	10	Thunder storm
27													
28													
29	4.30 p m												
30		5.45 a m							1 06		S W	15	
									3 57				

November, 1901. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 27.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4													
5	6.00 a m	9.00 a m	0.03	6.15 a m	0.05	6.15 a m	0.10	6.00 a m	0.10		N W	10	
6													
7													
8													
9													
10													
11	2.55 p m	12.00 p m							0.13		W	12	
12	12.00 a m	5.00 p m	0.01	4.00 p m	0.02	4.00 p m	0.06	4.00 p m	0.12		S W	30	
13	2.00 a m	3.00 a m							0.03		N W	15	
14													
15	1.30 p m	1.50 p m							0.01		W	12	
16													
17													
18													
19													
20													
21													
22													
23	5.00 p m	12.00 p m							0.06		N E	40	
24	12.00 a m	11.00 p m	0.06	2.20 a m	0.07	2.20 a m	0.20	7.00 a m	1.14		N E	60	
25	1.30 p m	4.00 p m							0.01		N W	40	
26													
27													
28													
29	8.55 a m	11.00 p m							0.01				Melted snow
30													
									1.61				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

April, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 32.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	1.35 a m	2.00 a m							0.01		S W	12	Snow flurries
2													
3													
4													
5													
6	2.40 p m												
7		2.00 a m							0 81		N E	30	
8	12.00 a m	9.40 p m							1.51		N E	65	Thunder storm at 9.30 a m
9	11.45 a m	1.00 p m							0.06		E	12	
10	6.40 a m	7.50 a m							0.02		N	6	
11													
12	11.00 p m								0.01		W	7	
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26	3.30 a m	6.00 a m							0.09		S E	10	Thunder storm
27													
28													
29	4.30 p m												
30		5.45 a m							1 06		S W	15	
									3 57				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

November, 1901. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. **Table D 27.**

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4													
5	6.00 a m	9.00 a m	0.03	6.15 a m	0.05	6.15 a m	0.10	6.00 a m	0.10		N W	10	
6													
7													
8													
9													
10													
11	2.55 p m	12.00 p m							0.13		W	12	
12	12.00 a m	5.00 p m	0.01	4.00 p m	0.02	4.00 p m	0.06	4.00 p m	0.12		S W	30	
13	2.00 a m	3.00 a m							0.03		N W	15	
14													
15	1.30 p m	1.50 p m							0.01		W	12	
16													
17													
18													
19													
20													
21													
22													
23	5.00 p m	12.00 p m							0.06		N E	40	
24	12.00 a m	11.00 p m	0.06	2.20 a m	0.07	2.20 a m	0.20	7.00 a m	1.14		N E	60	
25	1.30 p m	4.00 p m							0.01		N W	40	
26													
27													
28													
29	8.55 a m	11.00 p m							0 01				Melted snow
30													
									1.61				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

April, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 32.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	1.35 a m	2.00 a m							0.01		S W	12	Snow flurries
2													
3													
4													
5													
6	2.40 p m												
7		2.00 a m							0 81		N E	30	
8	12.00 a m	9.40 p m							1.51		N E	65	Thunder storm at 9.30 a m
9	11.45 a m	1.00 p m							0.06		E	12	
10	6.40 a m	7.50 a m							0.02		N	6	
11													
12	11.00 p m								0.01		W	7	
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26	3.30 a m	6.00 a m							0.09		S E	10	Thunder storm
27													
28													
29	4.30 p m												
30		5.45 a m							1 06		S W	15	
									3 57				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. C. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

January, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. **Table D 29.**

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3	3.30 a m	5.05 a m							0.02	0.20	N W	15	Melted snow
4													
5													
6													
7													
8	4.00 a m	12.00 p m							0.20	3.00	N E	15	Melted snow
9	12.00 a m	2.30 a m								Tr.	N E	8	Snow
10													
11													
12													
13													
14													
15													
16													
17													
18													
19	12.20 a m	6.30 a m							0.02		N W	24	Rain and trace of snow
20													
21	4.40 p m												
22		5.00 a m							1.42		N E	50	
23													
24													
25													
26	1.00 p m												
27		2.30 p m							0.60		S E	12	
28													
29	9 40 a m												
30		12.00 m							0.24	3.00	N E	12	Melted snow
31	8.15 a m	12.00 p m							0.14	2.50	N E	15	Melted snow
									2.64	8.70			

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

February, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 30.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	12.00 a m	8.00 a m											
2	3.00 p m								0.03	0.50	N E	5	Melted snow
3		4.45 p m							0.49		W	45	Melted snow and rain
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17	12.05 p m	10.00 p m							1.30	11.40	N W	60	Melted snow
18													
19													
20													
21	6.55 a m												
22		5.00 p m							1.28	3.50	N E	20	Melted snow and rain
23													
24													
25	12.00 m												
26		8.00 a m	0.02	Various	0.04	Various	0.10	Various	1.15		N E	10	
27													
28	9.45 a m	10.30 p m	0.20	3.25 p m	0.40	3.25 p m	0.72	3.25 p m	1.10		E	40	
									5.35	15.40			

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. O. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

March, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 31.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	1.05 a m	2.50 a m							0.04		S	12	
2	4.46 a m	5.35 p m	0.05	10.00 a m	0.07	9.55 a m	0.20	9 45 a m	0.28		S E	40	
	5.00 p m	6.00 p m							0.01		S W	8	
3	6.10 a m	9.00 a m							0.04	0.50	W	6	
4													
5	2.00 a m	11.50 p m							0.88	7.50	N E	45	Melted snow and rain
6													
7													
8	1.30 p m												
9		8.40 a m							1.28		N E	15	
10													
11													
12													
13	12.15 p m	2.00 p m							0.07		W	20	
14													
15													
16	4.45 p m												
17		1.00 p m							0.45		S E	15	
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28	1.00 p m	12.00 p m							0.42		S E	12	
29	12.00 a m	10.00 a m							0.83		S E	40	
	3.45 p m	4.15 p m							0.02		N W	12	
30													
31	11.45 a m	11.00 p m							0.14		W	50	Snow flurries
									4.96	8.00			

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

April, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 32.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	1.35 a m	2.00 a m							0.01		S W	12	Snow flurries
2													
3													
4													
5													
6	2.40 p m												
7		2.00 a m							0 81		N E	30	
8	12.00 a m	9.40 p m							1.51		N E	65	Thunder storm at 9.30 a m
9	11.45 a m	1.00 p m							0.06		E	12	
10	6.40 a m	7.50 a m							0.02		N	6	
11													
12	11.00 p m								0.01		W	7	
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26	3.30 a m	6.00 a m							0.09		S E	10	Thunder storm
27													
28													
29	4.30 p m												
30		5.45 a m							1 06		S W	15	
									3 57				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

May, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 33.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3	12.02 a m	2.05 a m							0.18		S E	12	
	1.30 p m								0.01		S E	15	
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18									0.05		E	10	
19	12.20 p m	1.50 p m							0.03		E	4	
20	11.05 a m	12.00 m											
21													
22													
23													
24													
25	8.45 a m	10.30 p m	0.15	3.48 p m	0.15	3.48 p m	0.19	3.48 p m	0.69		S W	12	Thunder storm
26	10.15 p m	11.40 p m							0.05		N W	15	
27	12.00 m	1.30 p m							0.48		N W	20	
									0.05		N W	20	
28													
29													
30													
31													
									1.54				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

April, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 32.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	1.35 a m	2.00 a m							0.01		S W	12	Snow flurries
2													
3													
4													
5													
6	2.40 p m												
7		2.00 a m							0 81		N E	30	
8	12.00 a m	9.40 p m							1.51		N E	65	Thunder storm at 9.30 a m
9	11.45 a m	1.00 p m							0.06		E	12	
10	6.40 a m	7.50 a m							0.02		N	6	
11													
12	11.00 p m								0.01		W	7	
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
	3.30 a m	6.00 a m							0.09		S E	10	Thunder storm
	p m	5.45 a m							1 06		S W	15	
									3 57				

REPORT OF PRECIPITATION

NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET.

Table D 35.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	5.00 a m	5.30 a m							0.07		W	6	
2													
3	7.45 a m	10.00 a m	0.03	8.30 a m	0.05	8.25 a m	0.10	8.00 a m	0.14		S	12	
4													
5	3.50 p m	5.15 p m							Trace		N W	12	
6	12.35 a m	5.00 a m	0.01	3.15 a m	0.01	3.15 a m	0.01	3.15 a m	0.04		N E	3	
7													
8													
9													
10	10.15 a m	10.30 a m							0.01		S W	12	
11													
12													
13													
14													
15	7.15 p m	7.45 p m	0.10	7 20 p m	0.12	7.15 p m	0.36	7.15 p m	0.36		S W	20	Thunder storm with hail. Apparatus deranged by storm
16													
17	6.30 a m	8.00 a m							0.02		N W	2	
	11.20 a m	12 30 p m							0.06		N	10	
18													
19	8.45 p m	11.20 p m	0.05	11.00 p m	0.09	11.00 p m	0.21	10.15 p m	0.47		E	10	
20	8 25 p m	9.15 p m	0 10	8.27 p m					0.37		S W	9	Thunder storm. Cloudburst disarranged apparatus
21	6.37 p m	9.00 p m	0.05	7.05 p m	0.08	7.00 p m	0.11	6.44 p m	0.13		E	30	Thunder storm
22													
23													
24	4.30 p m	7.30 p m	0.04	5.15 p m	0.08	5.15 p m	0.28	5.15 p m	0.43		E	35	
25	7.55 a m	4.00 p m	0.02	7 55 a m	0.04	7.55 a m	0.25	7.55 a m	0.40		S E	50	
26													
27													
28	5.20 p m	8.20 p m	0.20	5.50 p m	0.20	5.50 p m	0.24	7.10 p m	0.54		S W	30	Thunder storm
29													
30													
31													
									3 04				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

April, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 32.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	1.35 a m	2.00 a m							0.01		S W	12	Snow flurries
2													
3													
4													
5													
6	2.40 p m												
7		2.00 a m							0 81		N E	30	
8	12.00 a m	9.40 p m							1.51		N E	65	Thunder storm at 9.30 a m
9	11.45 a m	1.00 p m							0.06		E	12	
10	6.40 a m	7.50 a m							0.02		N	6	
11													
12	11.00 p m								0.01		W	7	
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26	3.30 a m	6.00 a m							0.09		S E	10	Thunder storm
27													
28													
29	4.30 p m												
30		5.45 a m							1 06		S W	15	
									3 57				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.
ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET.

September, 1902. Table D 37.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2	12.30 a m	2.30 a m	0.01	12.30 a m	0.01	12.30 a m	0.01	12.30 a m	0.02		W	12	
3													
4	1.20 a m	2.15 a m	0.01	1.20 a m	0.02	1.20 a m	0.03	1.20 a m	0.03		W	25	
5													
6													
7	6.34 a m	9.00 a m	0.02	7.30 a m	0.05	7.30 a m	0.07	7.00 a m	0.13		S W	15	
8													
9	8.00 a m	10.05 p m	0.04	9.30 a m	0.06	9.60 a m	0 17	1.50 p m	0.82		S E	40	
10													
11													
12													
13	12.50 a m	8.00 p m	0.04	6.23 p m	0.04	6.23 p m	0.06	6.23 p m	0.24		S W	20	
14													
15													
16													
17													
18	8.00 a m	8.00 p m							0.03		N	10	
19									0 07		N E	10	
20									0.14		N E	10	
21	5.00 a m	4.00 p m	0.01	1.30 p m	0.01	1.30 p m	0 01	1.30 p m	0.03		N E	12	
22													
23													
24	2.00 p m	12.00 p m							0.12		N	15	
25	12.00 a m	12.00 p m							1.35		N E	15	
26	12.00 a m	12.00 p m							1.49		N E	15	Gauge not working
27	12 00 a m	6.00 a m							0.21		S W	6	
28	5.30 a m	4.10 p m							0.27		E	15	
29	3.00 a m	5.00 a m							0.08		W	15	
30	11.35 p m	12.00 p m	0 01	11 38 p m	0.01	11.38 p m	0.02	11.00 p m	0.02		N E	8	
									5.05				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET.

June, 1902. Table D 34.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4													
5													
6													
7	5.40 p m	6.10 p m	0.01	5.40 p m	0.02	5.40 p m	0.06	5.40 p m	0.06		S W	15	Thunder storm
8	8.40 a m	11.00 a m							0.07		N W	10	
9													
10													
11	3.15 p m	8.45 p m							0.55		S E	15	
12													
13	10.30 a m	11.30 a m							0.05		N W	12	
	9.35 p m												
14		2.00 a m							0.53		E	30	Thunder storm
15	3.30 a m	3.45 a m	0.01	3.35 a m					0.01		S E	2	
16	6.35 p m	12.00 p m	0.10	6.49 p m	0.13	6.49 p m	0.18	6.49 p m	0.54		S W	15	Thunder storm
17													
18													
19	8.40 a m	10.50 a m	0.08	9.50 a m	0.16	9.50 a m	0.28	9.00 a m	0.59		S W	8	
20													
21	5.10 a m	11.00 a m							0.70		S E	9	
	2.35 p m	4.10 p m							1.29		S E	15	
22													
23													
24	11.00 p m												
25	8.15 p m	12.30 a m							0.07		S W	15	Thunder storm
26		3.00 a m							0.57		S W	15	
27													
28													
29	7.15 a m	8.30 p m	0.21	10.00 a m	0.22	10.00 a m	0.43	10.00 a m	2.07		N E	24	
30													
									7.10				

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

July, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 35.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	3.00 a m	5.30 a m							0.07		W	6	
2													
3	7.45 a m	10.00 a m	0.03	8.30 a m	0.05	8.25 a m	0.10	8.00 a m	0.14		S	12	
4													
5	3.50 p m	5.15 p m							Trace		N W	12	
6	12.35 a m	5.00 a m	0.01	3.15 a m	0.01	3.15 a m	0.01	3.15 a m	0.04		N E	3	
7													
8													
9													
10	10.15 a m	10.30 a m							0.01		S W	12	
11													
12													
13													
14													
15	7.15 p m	7.45 p m	0.10	7 20 p m	0.12	7.15 p m	0.36	7.15 p m	0.36		S W	20	Thunder storm with hail. Apparatus deranged by storm
16													
17	6.30 a m	8.00 a m							0.02		N W	2	
	11.20 a m	12 30 p m							0.06		N	10	
18													
19	8.45 p m	11.20 p m	0.05	11.00 p m	0.09	11.00 p m	0.21	10.15 p m	0.47		E	10	
20	8 25 p m	9.15 p m	0 10	8.27 p m					0.37		S W	9	Thunder storm Cloudburst disarranged apparatus
21	6.37 p m	9.00 p m	0.05	7.05 p m	0.08	7.00 p m	0.11	6.44 p m	0.13		E	30	Thunder storm
22													
23													
24	4 30 p m	7.30 p m	0.04	5.15 p m	0.08	5.15 p m	0.28	5.15 p m	0.43		E	35	
25	7.55 a m	4.00 p m	0.02	7 55 a m	0.04	7.55 a m	0.25	7.55 a m	0.40		S E	50	
26													
27													
28	5.20 p m	8.20 p m	0.20	5.50 p m	0.20	5.50 p m	0.24	7.10 p m	0.54		S W	30	Thunder storm
29													
30													
31													
									3 04				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

August, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 36.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	9 00 p m	11.00 p m							0.01		S	12	
2													
3	10 00 a m	12.20 p m							0.18		S E	20	
4													
5													
6	3.30 a m	5.30 a m							0.09		S W	12	
	4.30 p m	5.30 p m							0.04		W	15	Thunder storm
7													
8													
9													
10	1.50 p m	9.30 p m							0.61		E	30	Thunder storm
11	2.20 a m	3.30 a m	0.05	3.15 a m	0.05	3.15 a m	0.05	3.15 a m	0.09		W	25	
	5.23 p m	6.35 p m	0.06	5.25 p m	0.09	5.25 p m	0.18	5.25 p m	0.18		W	25	
12													
13													
14													
15	3.45 p m	6.15 p m	0 06	6.08 p m	0.15	6.08 p m	0.15	6.08 p m	0.15		W	15	
16													
17													
18													
19	3.30 p m	9.00 p m	0.12	5.55 p m	0.20	5.55 p m	0.42	5.40 p m	0.64		W	35	Very sharp shower
20													
21	8.00 a m	8.35 a m	0.01	8.15 a m	0.01	8.15 a m	0.02	8.15 a m	0.02		S	15	
22													
23													
24													
25	1.55 p m	3.45 p m							0.07		N W	15	
26													
27	3.55 p m	5.10 p m							0.01		W	20	
28													
29													
30													
31													
									2.09				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

September, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 37.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2	12.30 a m	2.30 a m	0.01	12.30 a m	0.01	12.30 a m	0.01	12.30 a m	0.02		W	12.	
3													
4	1.20 a m	2.15 a m	0.01	1.20 a m	0.02	1.20 a m	0.03	1.20 a m	0.03		W	25	
5													
6													
7	6.34 a m	9.00 a m	0.02	7.30 a m	0.05	7.30 a m	0.07	7.00 a m	0.13		S W	15	
8													
9	8.00 a m	10.05 p m	0.04	9.30 a m	0.06	9.30 a m	0.17	1.50 p m	0.82		S E	40	
10													
11													
12													
13	12.50 a m	8.00 p m	0.04	6.23 p m	0.04	6.23 p m	0.06	6.23 p m	0.24		S W	20	
14													
15													
16													
17													
18	8.00 a m	8.00 p m							0.03		N	10	
19									0 07		N E	10	
20									0.14		N E	10	
21	5.00 a m	4.00 p m	0.01	1.30 p m	0.01	1.30 p m	0 01	1.30 p m	0.03		N E	12	
22													
23													
24	2.00 p m	12.00 p m							0.12		N	15	
25	12.00 a m	12.00 p m							1.35		N E	15	
26	12.00 a m	12.00 p m							1.49		N E	15	Gauge not working
27	12.00 a m	6.00 a m							0.21		S W	6	
28	5.30 a m	4.10 p m							0.27		E	15	
29	3.00 a m	5.00 a m							0.08		W	15	
30	11.35 p m	12.00 p m	0.01	11 38 p m	0.01	11.38 p m	0.02	11.00 p m	0.02		N E	8	
									5.05				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

October, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 38.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	12 00 a m	11.00 a m	0 04	4.50 a m	0.06	4.50 a m	0.28	4.00 a m	1.07		N W	20	
2													
3													
4	10.30 a m	7.00 p m	0.01	10.30 a m	0.01		0.01		0.05		N E	10	
5	1.45 a m	11.30 p m	0.03	11.30 a m	0.05	11.30 a m	0.15	11.30 a m	1.38		S E	15	
6	1.05 a m	3.05 a m	0.10	2.25 a m	0.11	2.20 a m	0.12	2.00 a m	0.19		S W	15	
7													
8													
9													
10													
11	11.30 a m	12.00 p m	0.05	10.10 p m	0.09	10.10 p m	0.26	10.00 p m	1.61		N W	24	
12	12.00 a m	7.00 a m	0.03	2.50 a m	0.04	2.50 a m	0.12	2 50 a m	0.29		N W	12	
13													
14													
15													
16													
17	5.00 a m	7.45 a m	0.01	7 15 a m	0 02	7.15 a m	0.09	6.45 a m	0.14		N W	12	
18													
19													
20													
21													
22													
23													
24													
25													
26													
27	9.15 p m		0.06	11.40 p m	0.09	11.40 p m	0.24	11 00 p m	0.51		S E	10	
28	12.00 a m	8.00 a m	0.10	1.08 a m	0.16	1.08 a m	0.36	1.00 a m	1 41		N W	40	
29													
30													
31													
									6.65				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

March, 1903. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 43.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4													
5													
6													
7	6.25 p m												
8													
9		9.40 p m							1.67		E	15	
10													
11	6.00 a m	12 15 p m							0.15		N W	15	
12													
13													
14													
15													
16													
17													
18													
19													
20													
21	5.40 a m												
22													
23		10.00 p m							1.53		E	30	
24	5.30 p m	5.50 p m							0 05		S W	12	
25													
26													
27													
28													
29													
30	3.20 p m	11.45 p m							0.67		N E	30	
31	12.30 a m	12.40 a m							0.01		N W	20	
									4.08				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

December, 1902. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 40.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1	12.00 a m	12.40 a m							0.02		S W	12	Melted snow and rain
2	8.55 p m	12.00 p m	0.08	11.00 p m	0.05	10.58 p m	0.16	11.00 p m	0.23		S W	15	
3	12.00 a m	4.00 a m							0.50		N W	15	Rain, snow and sleet
4	10.20 p m	12.00 p m							0.10		N	20	Rain and melted snow
5	12 00 a m	12.00 m							0.60		N W	75	Rain and melted snow
6													
7	10.30 a m	3.30 p m							0.03	1.00	S W	15	Melted snow
8													
9													
10													
11	12.45 p m	10.15 p m							0.26		N W	15	
12	8.40 p m	12.00 p m							0.06	0.50	N	12	Melted snow
13	12.00 a m	12.00 p m							0.20	6.00	N E	20	Melted snow
14	12.00 a m	6.30 a m							0.03	1.00	N	20	Melted snow
15	8.45 p m	12.00 p m							0.16	1.00	N	10	Melted snow
16	12.00 a m	10.00 p m	0.10	4.40 p m	0.13	4.40 p m	0 25	3.15 p m	2 32		S E	24	
17													
18													
19													
20													
21	8.25 a m	12.00 p m							1.46		N E	15	
22	12.00 a m	3.00 a m							0.30		W	15	
23													
24													
25									0.36	6.20	N W	20	Melted snow
26													
27													
28													
29	12 30 p m	8.40 p m							0.75		S	20	Rain and melted snow
30													
31													
									7.87	15.70			

MONTHLY REPORT OF PRECIPITATION (RAIN ... U. S. GOVERNMENT RAIN GAUGE.

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH

January, 1903. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 41.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2	5.40 p m								0.42				
3		4 30 a m							0.83		N E	12	
4													
5													
6	5.20 a m	11.00 a m							0.05		N W	20	Rain and melted snow
7	12.45 p m	5.00 p m							0.07		S	12	Melted snow
8													
9													
10													
11	9.40 a m	7.10 p m							1.00	.50	E	20	½ inch snow on level
12													
13													
14													
15													
16													
17													
18													
19													
20													
21	12.00 a m	8 50 a m							0.85		W	30	
22													
23													
24	6.40 p m												
25		5.00 p m							0.53	5.00	N E	20	5 inches snow on level
26													
27													
28	3.30 a m	9.00 a m							0.37		W	15	
29	5.30 p m												
30		9.00 a m							0.14		N E	30	
31													
									4.26	5.50			

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

February, 1903. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. **Table D 42.**

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4	2.30 a m	7.00 p m							0.63		N W	30	Thunder storm at end
5													
6													
7													
8	8.30 a m	4.00 p m							0.55		E	24	Hail at 3.15 a m
9													
10													
11	11.50 a m	9.20 p m							0.49		S	20	Some sleet
12													
13													
14													
15	7.35 a m												
16													
17		11.00 a m							1.83	10.00	N	30	10 inches snow on level
18													
19													
20													
21													
22													
23													
24													
25													
26													
27	8.00 p m												
28		6.00 p m							1.09		S	40	
									4.59	10.00			

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

March, 1903. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 43.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4													
5													
6													
7	6.25 p m												
8													
9		9.40 p m							1.07		E	15	
10													
11	6.00 a m	12 15 p m							0.15		N W	15	
12													
13													
14													
15													
16													
17													
18													
19													
20													
21	5.40 a m												
22													
23		10.00 p m							1.53		E	30	
24	5.30 p m	5.50 p m							0 05		S W	12	
25													
26													
27													
28													
29													
30	3.20 p m	11.45 p m							0.67		N E	30	
31	12.30 a m	12.40 a m							0.01		N W	20	
									4.08				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

August, 1903 — ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. — Table D 48.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4	1.45 p m												
5		6.00 a m							4.57		E	30	
6	1.00 p m	10.35 p m							0.17		E	20	Thunder storm
7	12.30 a m	2.30 a m							0.17		N W	25	
8													
9	3.20 a m	9.15 a m							0.03		E	8	
10													
11	1.10 p m	2.00 p m							0.02		S E	15	
12													
13													
14	8.30 a m	10.30 a m							0.02		S W	18	
15													
16													
17													
18													
19	11.20 a m	11.05 p m	0.45	2.10 p m	0.75	2.05 p m	2.45	2.00 p m	4.44		S E	20	Severe thunder storms
20	1.45 a m	4.50 a m							0.39		N W	25	Thunder storm
21													
22	8.00 p m	8.40 p m							0.04		S W	30	
23	12.05 a m	7.20 a m							0.02		S W	10	
24	2.00 a m	4.30 a m							0.08		S W	10	
25	4.30 p m	11.35 p m							0.39		S	45	Thunder storms
26													
27	12.30 a m	12.00 p m							0.07		E	12	
28	1.00 a m								1.98				
29									1.58				
30		11.00 p m							0.57		N E	30	
31													
									14.54				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW)..

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

September, 1903. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 49.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4													
5	3.30 p m	7.00 p m	0.15	3.58 p m	0.28	3.55 p m	0.37	3.50 p m	0.30		N W	15	
6													
7													
8													
9													
10													
11	12.15 a m	1.45 a m							0.16		W	4	
12													
13													
14													
15													
16	4.10 a m	4.00 p m	0.30	12.00 a m	0.45	12.00 a m	1.15	11.15 a m	2.71		N E	65	Hurricane
17	12 10 p m	12.00 p m	0.83	5.25 p m	0.56	5.25 p m	0.65	5.00 p m	0.90		S E	50	
18													
19													
20													
21													
22													
23													
24													
25													
26													
27	6.30 a m	9 40 p m	0.13	5.20 p m	0.19	5.18 p m	0.28	5.18 p m	0.40		S W	15	Thunder storms
28													
29													
30													
									4.56				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

June, 1903. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 46.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4													
5													
6													
7	2.40 a m	9.00 p m							0.32		E	15	
8	1.45 a m	12.00 p m							0.48		S E	12	Thunder storm
9	4.15 a m	4.30 a m							0.03		S E	12	
10	12.30 p m	2.00 p m							0.07		E	8	Thunder storm
11	10.00 p m								0.08				
12		12.00 a m							2.93		S E	20	
13	3.30 a m	5.00 p m							0.50		S E	12	Thunder storm
14	3.00 a m	8.45 p m							0.91		S E	12	Thunder storms
15	4.00 a m	10.00 p m							0.23		N W	30	
16													
17	3.00 a m												
18		8.00 a m							0.71		S E	15	
19	5.55 a m	11.15 p m							0.24		S E	15	
20	1.30 a m	8.00 p m	0.08	7.40 p m	0.13	7.30 p m	0.16	7.15 p m	0.42		S E	12	Showers
21	1.45 a m	1.30 p m							0.24		W	30	Thunder storm
22	8.30 p m	9.00 p m							0.01		N E	12	
23	8.00 a m												
24		8.00 a m							1.36		N E	15	
25													
26													
27													
28													
29	3.25 a m	11.30 a m	0.28	11.45 a m	0.38	11.45 a m	0.70	9.40 a m	2.89		N E	15	Thunder storm in early morning
30													
									11.50				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

July, 1903. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table D 47.

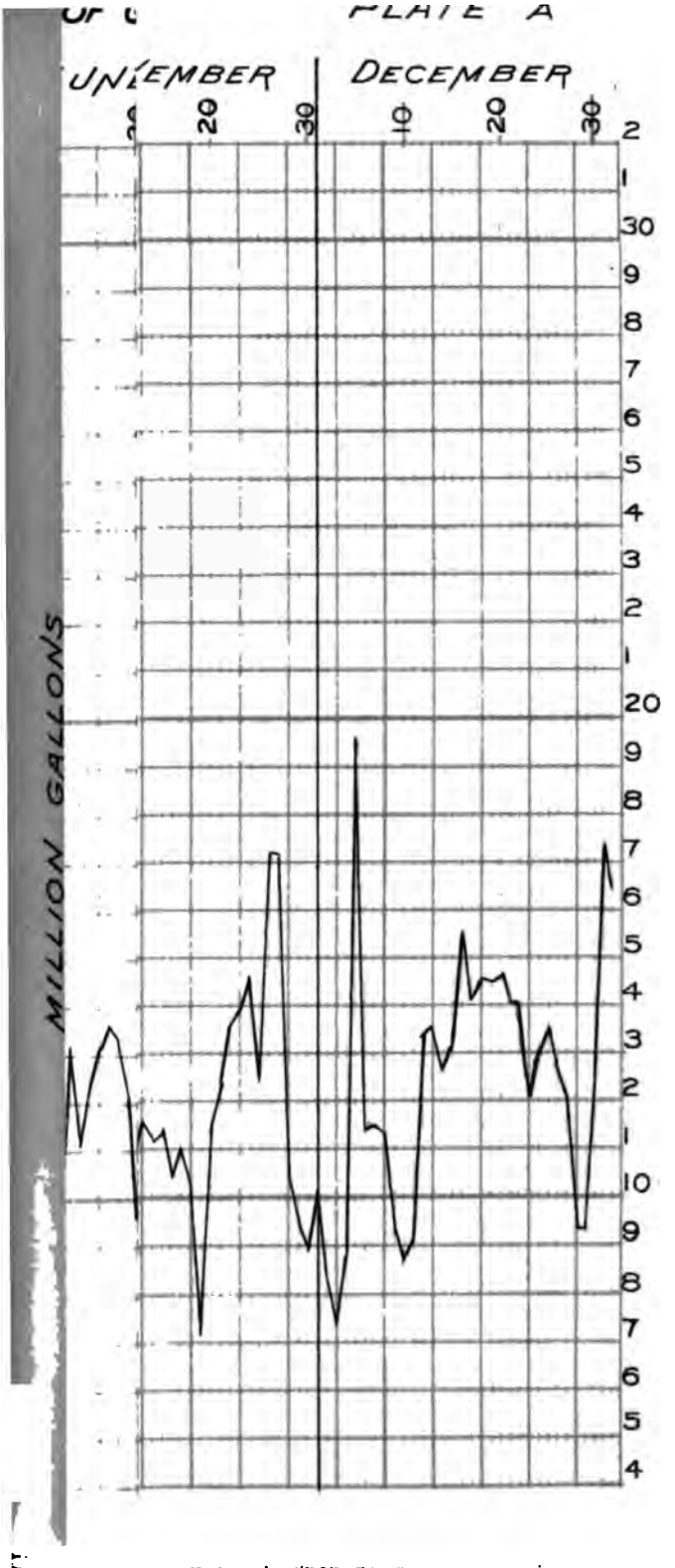
Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2	3.35 p m	4.05 p m							0.35		S W	48	Thunder storm
3	6.50 p m	8.20 p m							0.05		W	15	
4													
5													
6	12 30 a m	8.00 a m							0.02		S W	12	
7													
8													
9													
10													
11	2.30 p m	3.30 p m							0.17		N W	15	Thunder storm
12	3.25 p m	10.30 p m							0.01		S W	15	Thunder storm
13	2.00 a m	12.10 p m							0.12		W	8	
14													
15													
16													
17													
18	10.00 a m	10.45 p m							1.15		S E	30	
19													
20									0.63		S E	20	Thunder storms
21													
22													
23	1.35 p m	9.55 p m							1.05		E	20	Thunder storms
24													
25													
26	3.00 p m	4.00 p m							0.06		S W	25	
27													
28													
29	8.00 p m	10.00 p m							0.17		S W	20	Thunder storm
30	4.30 p m	10.15 p m							0.49		S W	30	Thunder storm
31													
									4.27				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

August, 1903 — ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. — Table D 48.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2													
3													
4	1.45 p m												
5		6.00 a m							4.57		E	30	
6	1.00 p m	10.35 p m							0.17		E	20	Thunder storm
7	12.30 a m	2.30 a m							0.17		N W	25	
8													
9	3.20 a m	9.15 a m							0.03		E	8	
10													
11	1.10 p m	2.00 p m							0.02		S E	15	
12													
13													
14	8.30 a m	10.30 a m							0.02		S W	18	
15													
16													
17													
18													
19	11.20 a m	11.05 p m	0.45	2.10 p m	0.75	2.05 p m	2.45	2.00 p m	4.44		S E	20	Severe thunder storms
20	1.45 a m	4.50 a m							0.39		N W	25	Thunder storm
21													
22	8.00 p m	8.40 p m							0.04		S W	20	
23	12.05 a m	7.20 a m							0.02		S W	10	
24	2.00 a m	4.30 a m							0.08		S W	10	
25	4.30 p m	11.35 p m							0.39		S	45	Thunder storms
26													
27	12.30 a m	12.00 p m							0.07		E	12	
28	1.00 a m								1.98				
29									1.58				
30		11.00 p m							0.57		N E	30	
31													
									14.54				


PLATE A
NOVEMBER
DECEMBER
20
30
10
20
30
MILLION GALLONS
2
1
30
9
8
7
6
5
4
3
2
1
20
9
8
7
6
5
4
3
2
1
10
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8
7
6
5
4

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MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

December, 1903 — ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. — Table D 52.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind.	Miscellaneous.
1													
2	3.00 p m	12.00 p m							0.20		N E	15	Melted snow
3	12.00 a m	10.00 a m							0.20		N W	18	Melted snow
4													
5													
6													
7													
8													
9	10.00 a m	9.10 p m							0.01		N	12	
10													
11													
12													
13	3.00 a m	11.05 a m							0.03		W	40	
14													
15													
16													
17													
18													
19													
20	1.20 a m	5.00 p m	0.03	10.55 a m	0.06	10.55 a m	0.20	10.55 a m	1.23		S E	30	
21													
22													
23													
24													
25	11.00 a m	3.30 p m							0.06		S	12	
26	7.15 a m	11.00 a m							0.03		N W	55	Melted snow
27	7.42 a m	10.50 a m							0.10		S W	20	Melted snow
28													
29	7.15 a m	2.00 p m							0.20		N	12	Melted snow
30													
31													



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ANNUAL REPORT

OF THE

Board of Street and Water Commissioners

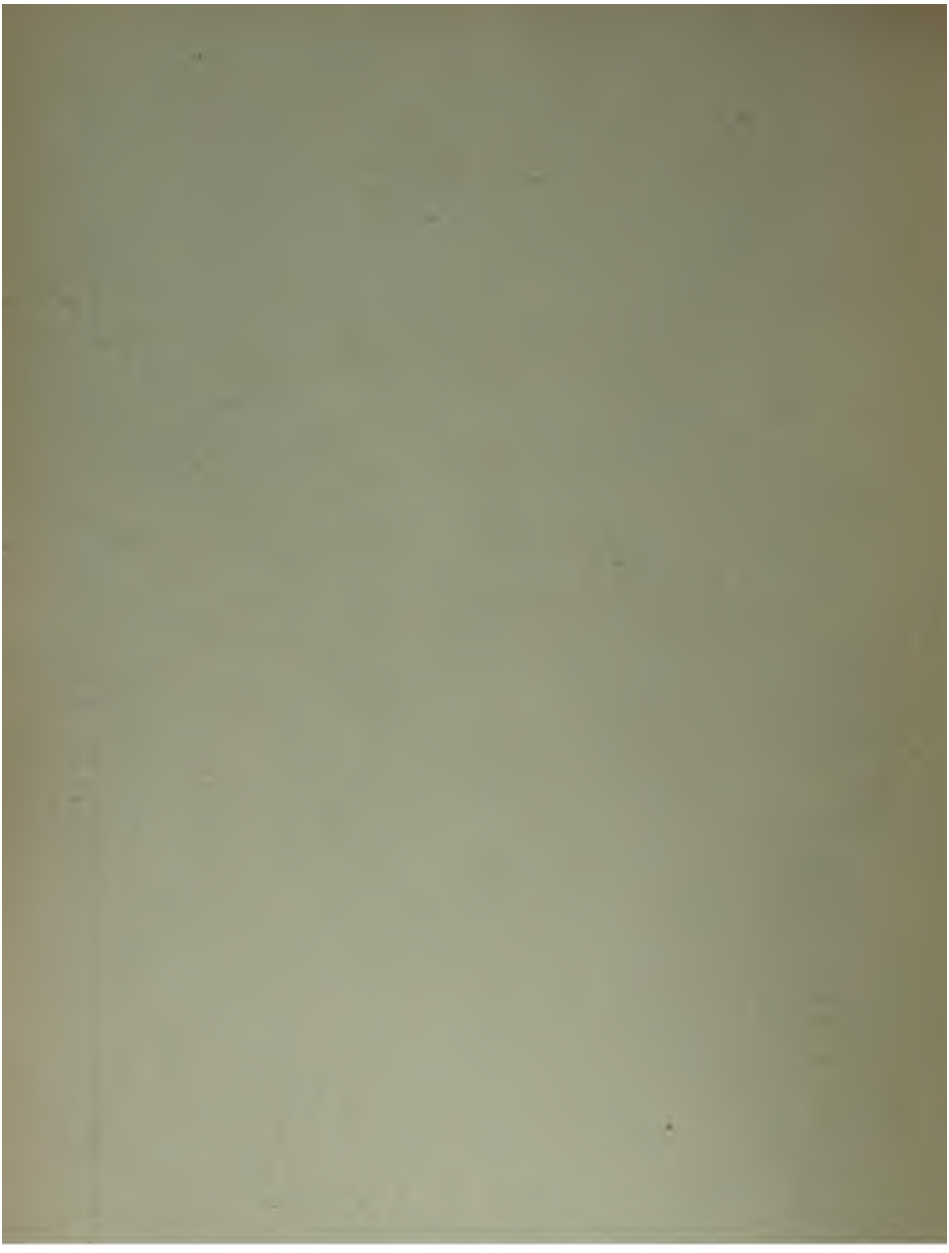
OF THE

CITY OF NEWARK, N. J.

FOR THE YEAR

1904

[illegible] PRINTING CO., NEWARK



ANNUAL REPORT

OF THE

Board of Street and Water Commissioners

OF THE

CITY OF NEWARK, NEW JERSEY.

FOR THE YEAR ENDED DECEMBER 31, 1904.

OFFICERS AND MEMBERS.

PRESIDENT.....C. V. BAUMANN, 385 S. 10th Street

COUNSEL.....*HENRY YOUNG, 800 Broad Street
JOS. COULT, 58 Mt. Pleasant Avenue

CLERK OF THE BOARD. ...WILLIAM E. GREATHEAD, 1090 Broad Street

GENERAL SUP'T OF WORKS. ...J. CROWELL MUNDY, 259 Belleville Avenue

ENGINEER & SUP'T DEPT. WATER. ..MORRIS R. SHERRERD, 938 Broad Street

ENGINEER DEPT. STREETS & HIGHWAYS, ..ERNEST ADAM, 202 Peshine Avenue

ENGINEER DEPT. SEWERS & DRAINAGE, ..EDWARD S. RANKIN, 751 High Street

CASHIER DEPT. WATER, ..HENRY D. NORTHROP, 28 Waverly Avenue

COMMISSIONERS.	RESIDENCE.
AUGUSTUS F. EGGERS	No. 21 S. 10 Street
GEO. M. BALLARD	29 Milford Avenue
C. V. BAUMANN	385 S. 10th Street
JOS. S. VINSON	277 Walnut Street
GEO. H. PHILLIPS	141 Lincoln Avenue

*Resigned April, 1904.

NEWARK, N. J.:
BAKER PRINTING CO.,
251 MARKET ST.

1905.

To the Honorable the Mayor and Common Council of the City of Newark, N. J.

Pursuant to law, the Board of Street and Water Commissioners of the City of Newark, N. J., hereby presents its annual report, showing the condition of the public works and property of the city under the government, control, and management of said Board, for the fiscal year ended December 31st, 1904.

REPORT OF

THE ENGINEER AND SUPERINTENDENT OF THE DEPARTMENT OF WATER.

To the Board of Street and Water Commissioners of the City of Newark, N. J.

GENTLEMEN.—Herewith is submitted the report of the condition and operation of the works of the Department of Water for the year ended December 31st, 1904:

CONSUMPTION.

The number of new taps made during the year was 1,005 (an increase of 103 over last year). Of these, seventeen were 6-inch; ten, 4-inch; three, 3-inch; twenty-nine, 2-inch; one, 1½-inch; one hundred and twenty-one, 1-inch; and eight hundred and twenty-four, ⅝-inch diameter.

The number of taps at the first of January, 1905, was 38,185.

The following table gives the delivery of water to the distributing reservoirs (average consumption), &c., for 1904:

CONSUMPTION STATEMENT FOR THE YEAR ENDED DECEMBER 31ST, 1904.

MONTH. 1904.	Total consumption Per Month. Million Gallons	Average Daily Consumption. Million Gallons.	No. of Taps at Beginning of Each Month.	Average Daily Consumption per Tap per Million Gallons.	Mean Temperature.	Rainfall in Inches.
January.....	1024.8	33.1	37,180	889	21.8	3.27
February	1064.2	36.7	37,192	987	24.0	2.67
March	1027.3	33.1	37,205	891	35.4	3.56
April	859.1	28.6	37,263	769	45.7	4.71
May.....	807.7	26.0	37,356	698	62.7	2.93
June.....	909.4	30.3	37,484	809	68.7	3.00
July	932.0	30.0	37,595	800	72.7	5.36
August	913.7	29.5	37,690	791	70.7	7.46
September.....	887.9	29.6	37,811	783	64.8	4.19
October.....	903.2	29.1	37,928	769	51.4	4.16
November	850.7	28.4	38,026	747	39.8	1.85
December. ...	1002.5	32.3	38,116	849	26.2	2.87
Total	11182.5					46.03

Average daily consumption 30,553,279 gallons
" " " per tap..... 800 "
Approximate number of taps at the end of the year.....38,185

The accompanying folder gives the consumption since 1892 when the gravity plant was introduced. The average daily consumption per tap was increased from 716 gallons in the year 1903 to 800 gallons, 1904. This was due to the long period of extraordinary cold weather of last winter when householders were in the habit of letting the water run in order to prevent freezing of the service pipes, and also to the comparatively small rainfall during last summer over previous years.

Detailed information in regard to street mains, services, meters, &c., may be found in the appended tables.

THAWING OUT WATER PIPES BY ELECTRICITY.

The winter of 1904 was unprecedented for the continuation of its severity and extreme cold, which drove the frost to a depth of about 4 feet 6 inches to 5 feet, an average of about nine inches lower than usual in the same locality. As a result of this extraordinary condition, there were a number of frozen services throughout the city, which was particularly true in connection with services laid previous to 1895, under old pavements where street mains and services had not been lowered. Out of a total number of 2,000 frozen services, there were only 88 on recently reconstructed street work, and practically all of these were under the sidewalk (for which the property owner is responsible). The first frozen services were thawed out and lowered by this department, but failing on account of the large number of complaints to make any headway, the assistance of private plumbers was called upon. But even in this way, not being able to overcome the difficulty, we had to resort to the use of electricity following the process which was first developed at Madison, Wisconsin, by Professors Wood and Jackson (description of this process will be found in the Proceedings of the American Water Works Association for 1899), which proved successful under the prevailing conditions.

REVENUE FROM WATER.

For revenue from water during last year see Financial Statements appended.

DISTRIBUTION.

The extensions to street mains in the city during the year 1904 were as follows:

96	lineal	feet	of	12"	pipe
240	"	"	"	10"	"
86	"	"	"	8"	"
21,086	"	"	"	6"	"
48	"	"	"	4"	"

Total, 21,556 lin. ft. or $4\frac{3486}{5280}$ miles.

The approximate mileage of pipe of the different diameters in the city, including the 48" and 42" conduits from Macopin intake to Belleville, and South Orange Avenue Reservoirs, also the 60" conduit from Great Notch to Cedar Grove Reservoir, and from the latter to the intersection of Bloomfield Avenue and North Fifth Street, up to January 1st, 1905, is as follows:

43,200	lineal	feet	of 60	inch	diameter
141,197	"	"	48	"	"
82,192	"	"	42	"	"
49,718	"	"	36	"	"
24,920	"	"	30	"	"
48,605	"	"	24	"	"
38,630	"	"	20	"	"
10,705	"	"	16	"	"
37,411	"	"	12	"	"
59,515	"	"	10	"	"
44,586	"	"	8	"	"
913,909	"	"	6	"	"
130,477	"	"	4	"	"
1,390	"	"	3	"	"

1,626,455 lin. ft. $308\frac{815}{5280}$ miles.

This does not include any pipe connected with the High Pressure System laid during this year.

The total length of pipe connected with the works is as follows:

In the city	$308\frac{815}{5280}$	miles
Belleville Township	$13\frac{1001}{5280}$	"
Vailsburgh (Columbia Heights)	$2\frac{1100}{5280}$	"
South Orange Avenue (Shooting Park)	$\frac{1100}{5280}$	"
Total	$323\frac{4016}{5280}$	miles

The amount of work done in relaying was as follows:

126	lineal	feet	of 36"	pipe
447	"	"	10"	"
632	"	"	8"	"
1,814	"	"	6"	"

Total, 3,018 lineal feet.

The amount of work done in the way of lowering pipe:

615 lineal feet of 6" pipe.

During the year, 89 new hydrants were set; of these, 45 were substituted in place of old hydrants; 44 were added to the total number in service, making a total of 2,365 set in the city at the end of the year.

HIGH PRESSURE FIRE SERVICE.

The Common Council agreed to furnish the necessary funds for laying a high pressure fire service main from the supply conduits on South Orange Avenue near South Seventh Street to the corner of Broad and Market Streets, with branches north and south on Broad Street and east on Market Street, as stated in last year's report.

Work was commenced in July by taking out a 30-inch cast iron line of pipe in Belleville between Belleville Pumping Station and Belleville Receiving Reservoir, a distance of about one mile, (said line was formerly known as Pump Main No. 2). Pipes were found in first-class condition after being underground twenty-three years. After being carefully cleaned and recoated, the pipes were relaid in South Orange Avenue from the junction of Springfield Avenue to South Seventh Street and connected with the 36-inch main in South Seventh Street recently laid by this department. A 16-inch connection has also been made with the 20-inch line in Norfolk Street at South Orange Avenue, and a 16-inch branch was put in at South Orange Avenue and Beacon Street pointing south in order to run a 16-inch line in a southerly direction in the future.

About 1,400 lineal feet of 24-inch pipe have been laid in Market Street west of Broad Street. Said pipe has been provided with 12-inch branches and gates at the intersection

of side streets, and 8-inch branches have been put in about every 300 feet for fire hydrants.

About 3,250 feet of 20-inch pipe have been laid in Broad Street, both sides of Market Street. Said pipe has also been provided with 12-inch branches at the intersection of side streets, and 8-inch branches put in for fire hydrants.

The remainder of this work will be completed in the early part of next year.

NEW STORAGE RESERVOIR.

The report for 1903 contained detailed information in regard to this important part of the water plant. The progress of the construction work during 1904, has been more satisfactory and rapid than at any other time. There still remains approximately $15,000 worth of work to be done on the main contract for final completion. Except for the early advent of cold weather, the entire construction would have been finished during 1904. The work progressed sufficiently towards completion to allow the reservoir to be filled to about one-half of its capacity. This water has been held in reserve over winter to guard against accidents which might interrupt the use of the watershed conduits. Also the remaining work to be done is of such a character that the total cost for completion can now be practically declared. Including the payments made for the 36-inch high service line across the western part of the city, and also the interest on all the temporary loans to January 1st, 1905, the total cost will be $1,950,000.00. Any additional interest to the time of the issue of bonds should be added to the above, and proper allowances made for such penalties as may be deducted. A detailed statement of the actual expenditures on account of New Storage Reservoir to January 1st, 1905, will be found among the financial statements.

WATER SHED.

The great flood in the Passaic Valley in October, 1903, as stated in the last report, caused considerable damage to the New Water Supply plant. No serious results followed, but it was expedient that considerable repairs be made to the diverting dyke at the river changes just below Macopin

intake where the conduits were nearly washed out. Also rather extensive repairs were made to the spillways of Oak Ridge and Clinton Reservoirs. The work at Clinton spillway was not all made necessary by the flood, as most of the repairs at this point had been contemplated before. All work was done by our own force under the direction of Mr. George S. Briggs, Superintendent of Watershed.

In July, 1904, Mr. Carleton E. Davis, Resident Engineer on the New Storage Reservoir, who had direct charge of the preparation of the plans and construction work up to that time, went with the Panama Canal Commission in charge of waterworks and sewers. Since July, the Cedar Grove Reservoir work has been in charge of Mr. J. Ralph Van Duyne. The construction work in the city, including the laying of the high pressure water system, and the distribution plant, has been in charge of Mr. George Sanzenbacher, Assistant Engineer and Superintendent.

Respectfully submitted,

M. R. SHERRERD,

Engineer and Sup't Dept. Water.

DETAIL STATEMENTS

to accompany

Report of the Engineer and Supt.

Department of Water.

STATEMENT OF PIPE LAID IN 1904.

Month, 1904.	LOCATION OF PIPE	LENGTH IN LINEAL FEET.					Stops.	Hydrants.
		12 in.	10 in.	8 in.	6 in.	4 in.		
Jan.....	Branford St., west of Frelinghuysen Ave.....				181		1	
"	Tillingast St., from dead end 250 feet west of Osborne Terrace easterly.....				72			
March...	Thomas St., from dead end 125 feet east of Dawson St. easterly...				24			
April....	Delavan Ave., from Peabody Place to Oraton St.....				259		1	
"	Clifton Ave., from north side Montclair Ave. southerly.....		96					
May.....	Rose St., across Peshine Ave.....				96		1	
"	Augusta St., from Plane St. west.....					48		
"	Hunterdon St., from dead end 250 ft. south of Hawthorne Ave. north.....		..	...	60			
"	Bigelow St., from Milford Ave. to Johnson Ave.....		..		252			
"	Belmont Ave., from Watson Ave. south.....		..		291	...	1	1
"	Elizabeth St., across Niagara St.....		..		83		2	1
"	Grafton Ave., from Summer to Woodside Ave.; Woodside Ave., from Grafton to Montclair Ave.....		..		1,042		1	2
"	Albert Ave., from Chapel St. to Manfg. R. R.....		..		542			1
June	Shanley Ave., from dead end north of Clinton Ave. north.....	48	.					
"	Sherman Ave., from Branford St. to Runyon St.; Runyon St.,		..					
"	from Sherman Ave. westerly.....		..	...	485		2	1
"	Treat Place, south of Branford Place.....		..		59	...	1	
"	Fourth Ave., between 11th and 12th Sts.....		..		218		1	
"	Roseville Ave., from north side First Ave. to dead end.....		.	.	1,841		9	4
	Carried forward.....	48	96		5,505	48	20	10

STATEMENT OF PIPE LAID IN 1904.

Month, 1904.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET.					Stops.	Hydrants.
		12 in.	10 in.	8 in.	6 in.	4 in.		
	Brought forward	48	96		5,505	48	20	10
June	Third Ave., across Roseville Ave			86			2	
"	Ridgewood Ave., from dead end south of Bigelow St. south				86			
"	Weston Ave., from Frelinghuysen Ave. east across Penn. R. R. to Wheeler Paper Works				2,001		3	3
"	Belmont Ave. (Silver Lake), across Greenwood Lake R. R				40			
"	Beverley St., from dead end to City Line				180			
"	Avon Ave., from Peshine Ave. west		144					
"	Hawthorne Ave., from Osborne to Hedden Terrace				317		1	
"	Hedden Terrace, from Runyon St. to Hawthorne Ave				494		2	1
July.....	Millbrook Place, between Seventh and Eighth Aves., from Summer Ave. west				266		1	1
"	Demarest St., from dead end north of Bragaw Ave. north				228			
"	Ridge St., south of Second Avenue south				192		1	
"	Summit St., from Central to Sussex Aves				112			1
"	Cross connection at Ridge St. south of Elwood Ave				60		1	
"	Cross connection at Parker St. south of Elwood Ave				60		1	
"	Cross connection at Highland Ave. south of Elwood Ave				60		1	
"	Cross connection at Lake St. south of Elwood Ave				60		1	
"	Cross connection at South 18th St. north of Clinton Ave				36		1	
"	Cross connection at South 20th St. north of Clinton Ave				48		1	
	Carried forward	48	240	86	9,745	48	36	16

STATEMENT OF PIPE LAID IN 1904.

Month, 1904.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET.					Stops.	Hydrants.
		12 in.	10 in.	8 in.	6 in.	4 in.		
	Brought forward	48	240	86	9,745	48	36	16
July	Sanford St., south side East Kinney St. north				97			
August	Chester Ave., from North 8th to North 9th St				241			1
"	Hunterdon St., from Runyon St. north				48			
"	Grafton Ave., from Clifton Ave. to Ridge St				316		1	
"	Vanderpool St., from Avenue A east				338		1	1
Sept.	Sixteenth Ave., from South 19th to South 20th St.; South 20th St., from 16th Ave. south				459		1	2
"	South Sixteenth St., from 14th Ave. south				169			1
"	Shanley Ave., from dead end north of Clinton Ave. north	48						
"	Tichenor St., across Penn. R. R.				113		1	
"	Chestnut St., across Penn. R. R.				114		1	
"	Mary St., from Avenue L east				339		1	1
"	Badger Ave., from Alpine St. south				470		1	1
"	Amity Place, from Seventh Ave. south				207		1	1
October	South 11th St., north of Madison Ave				422		1	1
"	Elizabeth Ave., from Watson to Lyons Ave				3,401		6	4
Nov.	Cypress St., from Leslie St. west				157			
"	Renner Ave., from Hunterdon St. to Seymour Ave				978		2	2
"	Sixteenth Ave., from Hunterdon St. east				48			
"	Fifteenth Ave., between South 13th and South 14th Sts				302		1	
	Carried forward	96	240	86	17,964	48	54	31

STATEMENT OF PIPE LAID IN 1904.

Month, 1904.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET.					Stops.	Hydrants.
		12 in.	10 in.	8 in.	6 in.	4 in.		
	Brought forward	96	240	86	17,964	48	54	31
Nov.	South 20th St., from dead end 250 feet south of 17th Ave. 216 feet south				216		1	
"	South 18th St , from north side Clinton Avenue to Alpine St.				453			1
"	Renner Ave., from Elizabeth Ave. north			...	715		3	1
"	Hunterdon St., from Renner to Sheerer Ave.; Sheerer Ave., from Hunterdon St. west				375		1	1
Dec.	East Kinney St., east of Sanford St.		...	...	267		1	1
"	Mapes Ave , from Elizabeth to Shepherd Aves				312	...		
"	Shepherd Ave., from Mapes Ave., north				218			1
"	South Orange Ave., south side from South 19th to South 20th Sts.	...			241		1	
"	South 17th St., from dead end 300 feet south of 15th Ave. to 100 feet south of 15th Ave	...			216			
"	North 1st St., from dead end north of Montclair Ave. north,				109			
	Totals	96	240	86	21,086	48	61	36

During the year 21,556 lineal feet of pipe have been laid in the city, of which

96 lineal feet of 12 inch diameter,
240 " " " 10 " "
86 " " " 8 " "
21,086 " " " 6 " "
48 " " " 4 " "
} 21,556 feet.

STATEMENT OF PIPE RELAID IN 1904.

Month, 1904.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET.				Stops.	Hydrants.
		36 in.	10 in.	8 in.	6 in.		
May	Niagara St., from Ferry St. south				205	1	
"	High St , from south side Orange Place to Nassau St.		447			2	
"	M. & E. R. R. Ave., east of High St. and south of Track Elevation				178	1	
July	Sussex Ave., from Summit St. west				48	1	
September	N. J. R. R. Ave., east side from Tichenor to Pennington St.			632		2	
"	N. J. R. R. Ave., east side from Pennington to Johnston St.				218	1	
"	N. J. R. R. Ave., east side from Chestnut to Oliver St.				229	1	
"	N. J. R. R. Ave., east side from Garden St. to New York Ave.				204		
"	N. J. R. R. Ave., from New York Ave. to Walnut St.				240		
"	New York Ave., across P. R. R.				117	2	
November	5th St., across D., L. & W. R. R. depression	125					
"	5th St., " " " " "				149	2	
"	N. 6th St., " " " " "				115	2	
"	N. 7th St., " " " " "				116	2	
	Totals	125	447	632	1814	17	

During the year 3018 lineal feet have been relaid in the city, of which

125 lineal feet of 36 in. diameter
447 " " " 10 " "
632 " " " 8 " "
1814 " " " 6 " "
} 3018 feet.

STATEMENT OF PIPE LOWERED IN 1904.

Month, 1904.	LOCATION OF PIPE.	LENGTH IN LINEAL FEET.		Stops.	Hydrants.
		10 in.	6 in		
May	Bremen St., from Hamburg Place east		615		
"	M. & E. R. R. Ave., north side, west of High St.		288		
June	Plane St., from Washington St. south	184			
	Totals	184	903		

During the year 1087 lineal feet have been lowered in the city, of which

184 lineal feet of 10 in. diameter
903 " " " 6 " " } 1087 feet.

PIPES LAID, RELAID AND LOWERED—YEAR ENDED DECEMBER 31, 1904.

	LENGTH IN LINEAL FEET.						Totals.	Stops.	Hydr.
	36 in.	12 in.	10 in.	8 in.	6 in.	4 in.			
Pipe LAID (extensions)		96	240	86	21086	48	21556	61	36
Pipe RELAID (substitution of large for small pipes, and replacing old horizontal cast pipe)	125		447	633	1814		3018	17	
Pipe LOWERED			184		903		1087		
MISCELLANEOUS. — Valves on hydrants substitution for old broken valves and replaced hydrants								90	46
Total	125	96	871	718	23803	48	25661	168	82

Total Pipe Laid, Relaid and Lowered during the year—25,661 lineal feet—4 $\frac{4441}{5280}$ miles.

Total mileage of Pipe connected with the works at the end of the year.—

STATEMENT OF SERVICES FOR YEAR ENDED DECEMBER 31ST, 1904.

¾ inch Services Month.	No. of New Services	No. of Services Renewed.	No. of Taps only.	No. of Stops and Boxes.	No. of New Water-Takers	No. of feet of Pipe.	Charges.
January.....	6	18			6	478½	$264.00
February	10	22			10	792	360.00
March	50	29			50	1755	990.00
April	75	13			75	1609	1,180.00
May.....	111	5			111	2133	1,604.00
June.....	97	9			97	1775½	1,448.00
July.....	86	11	1	1	87	1825	1,318.00
August	75	3			75	1686	1,080.00
September...	90	13		1	90	2126½	1,304.00
October.....	87	4	1	1	88	1977	1,262.00
November ...	77	2	1	1	78	1657	1,102.00
December....	57	1			57	1067	808.00
Total.....	821	180	3	4	824	18881½	$12,720.00

STATEMENT OF SERVICES FOR YEAR ENDED DECEMBER 31ST, 1904.

1 inch Services. Month.	No. of New Services.	No. of Services Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers.	No. of Feet of Pipe.	Charges.
January.....							
February	2	1			2	43	$60.00
March	4	1			4	134	100.00
April.....	16	4			16	417	400.00
May.....	9	2			9	302	220.00
June.....	8	4			8	224	240.00
July.....	8	1			8	222½	180.00
August	43	2			43	1052	900.00
September...	13	5			13	449½	360.00
October.	5	2	1	1	6	140½	140.00
November....	5	2	1	1	6	152½	140.00
December....	6				6	128	120.00
Total.....	119	24	2	2	121	3265	$2860.00

RECAPITULATION, 1904.

Size.	No. of New Services.	No. of Servic's Renewed.	No. of Taps Only.	No. of Stops and Boxes.	No. of New Water Takers	No. of feet of Pipe.	Charges.
⅝ inch.....	821	130	3	4	824	18,881½	$12,720.00
1 inch.....	119	24	2	2	121	3,265	2,860.00
Total.....	940	154	5	6	945	22,146½	$15,580.00

METERS SET BY CONSUMERS, 1904.

Month, 1904.	LAMBERT.							NASH.		CROWN.	TRIDENT.					Totals.
	5/8"	3/4"	1"	1½"	2"	3"	6"	5/8"	1"	5/8"	5/8"	1"	2"	4"	6"	
January	22					2					13	1				38
February	14	.							1		6	..	1			22
March	34			1			1				5	5				46
April	101										7	4				112
May	143			1	1	1		...			9	1	...			156
June	97	1		...	2						8	1				109
July	60									1	4	6			1	72
August	100					..		3	...		10	5	3			121
September	49			...	2						4	14	2			71
October	75				4		...	1			6	16	2			104
November	73					1				2	4	10	1			91
December	54		1		2						3	3	1	1		65
Totals	822	1	1	2	11	4	1	4	1	3	79	66	10	1	1	1,007

Number of Meters in use January 1st, 1904..... 15,019
Total number of Meters set during 1904..... 1,007

Total number of Meters in use January 1st, 1905..... 16,026

SPECIAL SERVICE CONNECTIONS FROM JANUARY 1st, 1904, TO DECEMBER 31st, 1904.

Month	1½ inch	2 inch	3 inch	4 inch	6 inch	Total
January	..	1	1	2	2	6
February	..	..	..	..	1	1
March	..	1	..	..	3	4
April	..	2	..	..	..	2
May	1	6	..	1	..	8
June	..	2	..	1	1	4
July	..	2	..	..	..	2
August	..	2	..	..	1	3
September	..	8	.	3	3	14
October	..	1	1	..	2	4
November	..	1	1	2	2	6
December	..	3	..	1	2	6
Total	1	29	3	10	17	60

HYDRANT STATEMENT.

FOR THE YEAR ENDED DECEMBER 31, 1904.

LOW SERVICE.

Month	No.	Location	Diam.	Hyd.	St'ps
April	1.	Riverside Ave., foot of Chester Ave.....	6"	1	1
May	2.	Bremen St. west side between Hamburg Pl. and Niagara St.	4"	1	1
	3.	Southeast corner Alyea and Elizabeth Sts.	6"	1	1
	4.	Woodside Ave., west side, between Grafton and Montclair Aves.....	4"	1	1
	5.	Northwest corner Woodside and Montclair Aves.....	4"	1	1
	6.	Albert Ave., north side, between Chapel St and Manufacturers' R. R.....	6"	1	1
June	7.	Albert Ave., north side, at dead end at Manufacturers' R. R.....	6"	1	1
	8.	Ogden St., east side, between Clay and Crane Sts.	4"	1	1
July	9.	Millbrook Pl., north side., at dead end west of Summer Ave.	4"	1	1
Aug.	10.	Ball's Lane east of Hamburg Pl.....	6"	1	1
	11.	Vanderpool St., north side of Ave. A...	6"	1	1
Sept.	12.	Mary St., north side, 200 ft. east of Ave. L.	4"	1	1
	13.	Southeast corner N. J. R. R. Ave. and New York Ave.	6"	1	1
Dec.	14.	East Kinney St., north side, east of Sandford St.	4"	1	1

HIGH SERVICE.

May	15.	Peshine Ave., west side of block, between Clinton Ave. and Bigelow St.	4"	1	1
	16.	Belmont Ave., west side, 300 ft. south of Watson Ave.	4"	1	1
June	17.	Northwest corner Runyon St. and Sherman Ave.	6"	1	1
	18.	Roseville Ave., west side middle of block between 1st and 2nd Aves.	4"	1	1

Month	No.	Location	Diam.	Hyd.	St'ps.
	19.	Northwest corner Roseville and First Aves.	4"	1	1
	20.	Roseville Ave., west side, middle of block between 2nd and 3rd Aves.	4"	1	1
	21.	Northwest corner 2nd and Roseville Aves.	4"	1	1
	22.	Weston Ave., north side, opposite Stengel's Tannery	6"	1	1
	23.	Weston Ave. east of main track P. R. R. (private hyd. P. R. R.)	6"	1	1
	24.	Weston Ave., west of Wheeler Paper Works	6"	1	1
	25.	Northeast corner 4th Ave. and N. 12th St.	4"	1	1
	26.	Northwest corner Hawthorne Ave. and Hedden Terrace	6"	1	1
July	27.	Southwest corner Summit St. and Sussex Ave.	6"	1	1
	28.	Northeast corner Chester Avenue and N. 9th St.	4"	1	1
Sept.	29.	Northeast corner 16th Ave. and S. 20th St.	4"	1	1
	30.	S. 20th St., east side, 200 ft. south of 16th Ave.	4"	1	1
	31.	S. 16th St., west side, 200 ft. south of 14th Ave.	4"	1	1
	32.	Badger Ave., west side, 470 ft. south of Alpine St.	6"	1	1
	33.	Amity Pl., at dead end south of 7th Ave.	4"	1	1
Oct.	34.	S. 11th St., west side, at dead end, 400 ft. north of Madison Ave.	4"	1	1
Nov.	35.	Northeast corner Meeker and Elizabeth Aves.	6"	1	1
	36.	Northwest corner Elizabeth and Renner Aves.	6"	1	1
	37.	Northwest corner Lehigh and Elizabeth Aves.	6"	1	1
	38.	Northwest corner Elizabeth and Lyons Aves.	6"	1	1
	39.	Northwest corner Renner Ave. and Bergen St.	4"	1	1
	40.	Southeast corner Renner and Seymour Aves.	4"	1	1
	41.	Southwest corner S. 18th and Alpine Sts.	4"	1	1
	42.	Renner Ave., north side, 700 ft. north of Elizabeth Ave.	4"	1	1
	43.	Northwest corner Scherer and Renner Aves.	4"	1	1
Dec.	44.	Shepperd Ave., west side, 200 ft. north of Mapes Ave.	4"	1	1

HYDRANTS REPLACED DURING THE YEAR 1904.

LOW SERVICE.

Month	No.	Location	Diam.	Hyd.	St'ps
Jan.	1.	John St., south side, middle of block between Hermon St. and N. J. R. R. Ave.	4"	1	1
	2.	Chestnut St., middle of block between Pacific and McWhorter Sts.	4"	1	1
	3.	Southeast corner Centre St. and Division Pl.	4"	1	1
Mar.	4	Maine St., west side, middle of block between Ferry and George Sts.	4"	1	1
	5.	Morris & Essex R. R. Ave. and Plane St.	4"	1	1
	6.	Northwest corner Hamburg Pl. and Napoleon St.	4"	1	1
	7.	Southeast corner N. J. R. R. Ave. and Garden St.	4"	1	1
	8.	Northwest corner Herman and South Sts.	4"	1	1
	9.	Esther St., west side, between Albert and Euclid Aves.	4"	1	
April	10.	Passaic Ave., south side, 50 feet west of Alley opposite Adams St.	4"	1	1
	11.	Southeast corner Passaic Ave. and Madison Pl.	4"	1	1
	12.	Southwest corner Ave. L and Mary St..	4"	1	1
	13.	Northeast corner Broad and South Sts..	4"	1	1
	14.	Mechanic St., south side, between Broad and Mulberry Sts.	4"	1	1
	15.	Northwest corner Broad and Bank Sts...	6"	1	1
	16.	Southwest corner Plane and Market Sts.	4"	1	1
	17.	River St., west side, between Coal and N. Canal Sts.	4"	1	1
	18.	Northeast corner Irving St. and Lincoln Ave.	4"	1	
May	19.	Northwest corner Bremen and Niagara Sts.	4"	1	1
	20.	Northwest corner Plane and William Sts.	6"	1	1
	21.	Northwest corner Plane and Augusta Sts.	6"	1	1
	22.	Northeast corner High St. and Orange Pl.	6"	1	1

Month	No.	Location	Diam.	Hyd.	St'ps
	23.	Northwest corner Plane and Nichols Sts.	4"	1	1
	24.	Northwest corner Plane and Court Sts..	4"	1	1
	25.	Northeast corner Komorn and Niagara Sts.	4"	1	1
	26.	Northwest corner Niagara and Paterson Sts.	6"	1	1
	27.	Southwest corner Elizabeth and Niagara Sts.	6"	1	1
Sept.	28.	Southeast corner N. J. R. R. Ave. and Garden St.	6"	1	1
	29.	Northeast corner N. J. R. R. Ave. and Chestnut St.	6"	1	1
Oct.	30.	Southwest corner Broad and Market Sts.	6"	1	
	31.	Belleville Ave., east side, opp. 7th Ave...	4"	1	1
Dec.	32.	Southeast corner New York Ave. and Garrison St.	4"	1	
	33.	Northeast corner Elm road and Gotthardt St.	4"	1	

HIGH SERVICE

Jan.	34.	Southwest corner S. 11th St. and 6th Ave.	4"	1	
	35.	Southwest corner S. 14th and Orange Sts.	4"	1	
Mar.	36.	Magnolia St., east side between Highland St. and 18th Ave.	4"	1	1
	37.	Northwest corner S. 18th St. and Avon Ave.	4"	1	
	38.	Northwest corner 4th St. and Central Ave.	4"	1	
April	39.	Northwest corner Bergen St. and 17th Ave.	4"	1	
	40.	Northeast corner South Orange Ave. and S. 9th St.	4"	1	
May	41.	Northwest corner Sussex Ave. and Newark St.	4"	1	1
	42.	Winans Ave., west side, between Bergen and Kipp Sts.	4"	1	1
Aug.	43.	William St., north side, between High and West Sts.	4"	1	1
	44.	Southwest corner Bloomfield and Roseville Aves.	4"	1	
Nov.	45.	Southeast corner Bloomfield and Summer Aves.	4"	1	1
	46.	Northwest corner William and High Sts.	4"	1	1

RECAPITULATION.

New hydrants set on Low Service	14
New hydrants set on High Service	30
New hydrants replacing old on Low Service	33
New hydrants replacing old on High Service	13
Total new hydrants, 1904	90

The total number of hydrants connected with the works at the end of the year was:

In the City on Low Service	1,085
In the City on High Service	1,280
Total in the City	2,365
At the Belleville Pump House and Reservoir	4
Township of Belleville	4
Township of South Orange	3
Columbia Heights	14
Total	2,390

FINANCIAL STATEMENTS.

ACCOUNTING DIVISION.

Department of Water.

YEAR ENDED DECEMBER 31, 1904.

To the Honorable the Mayor and Common Council of the City of Newark, N. J.

GENTLEMEN.—In accordance with section 20 of the law creating the Board of Street and Water Commissioners of the City of Newark, which requires me to make a report of the receipts and expenditures at the close of each fiscal year, I herewith submit the following as my report of the Department of Water for the year ended December 31st, 1904:

Cash Balance, December 31st, 1903	$121,529.89
Receipts from all sources	931,903.74
	$1,053,433.63
Less Disbursements on all accounts	921,382.25
Balance, December 31st, 1904	$132,051.38

WM. E. GREATHEAD,
Clerk of the Board.

Newark, N. J., March 1st, 1905.

William E. Greathead, Esq., Clerk of the Board of Street and Water Commissioners.

DEAR SIR.—I herewith submit financial statements and trial balance of the Department of Water for the year ended December 31st, 1904.

Respectfully yours,

H. D. NORTHROP,
Cashier.

RECEIPTS FOR 1904.

Balance, January 1st, 1904		$121,529.89
Advance Water Rent Collection	$234,414.17	
Hose Collection	2,149.00	
Fractional Water Rent Collection	745.79	
Sprinklers Collection	2,723.00	
Building Collection	3,390.38	
Special Water Rent Collection	39,772.42	
Arrears Water Rent Collection	4,762.06	
Measured Water Collection	454,920.64	
Service Collection Account	17,225.21	
Sales on Service Account	95.40	
Penalties and Fines	1,663.12	
Rents, Real Estate	1,917.00	
Sundry Personal Account	66,839.67	
		830,617.86
Sale of High Pressure Water Bonds	$100,000.00	
Accrued Interest on Bonds	76.71	
		100,076.71
Payment of Old Water Liens		1,209.17
Total		$1,053,433.63

DISBURSEMENTS FOR 1904.

(IN ITEMS.)

Weekly Pay Roll		$143,476.69
Monthly Pay Roll		51,195.93
Registered Bond Interest	$288,955.00	
Coupon Bond Interest	114,200.00	
		403,155.00
Horse shoeing		361.86
Coal and Wood		1,229.57
Stationery and Printing		3,055.24
Sundry Supplies		2,341.85
Gasolene and kerosene		1,219.29
Hay, oats and feed		1,866.80
Horse and wagon hire		288.50
Board and meals		270.05
Jute		396.90
New tools		939.64
Ice		131.65
Harness repairs		441.12
Corporation and curb stops		2,452.85
Water meters		13,757.00
Meter repair parts		2,342.57
Stable supplies		80.12
Lumber		2,144.49
Plumber supplies		1,213.78
Pig lead		4,599.43
Petty Expenses:—		
Accounting Division	$1,726.69	
Engineer and Superintendent	1,347.56	
		3,074.25
Coke		241.80
Repair, tools		1,265.93
Electrical Repairs		67.27
Repair, Wagons		1,436.82
Repair, typewriter		21.35
Advertising		89.40
Stop keys		57.75
Drugs and disinfectant		252.44
New hydrants		2,067.00

Sleeves and valves—castings	$ 4,499.93
Paint and painting	1,017.58
Rubber goods	636.37
Rent	375.00
Electric supplies	55.43
Addressograph supplies	127.00
Plumbers' Extra Work	422.01
Board of horses	1,200.00
New typewriter	87.75
Loss and gain	63.96
Track Depression—Extra labor and machinery	46.52
" " Fifth street bridge material	290.00
" " Galvanized iron pipe, &c.	127.24
" " Mineral wool	70.03
" " Blacksmith's work	169.44
Mason work, special	1,035.08
Manholes, frames and covers	201.88
High pressure valves	6,379.71
Pipe and castings, special	8,483.79
Engineer supplies	334.50
Freight	213.12
Truck hire—hauling pipe	2,921.83
Lead pipe	3,840.09
Oakum	64.50
Solder	441.36
Gas	255.70
Hydrant repair parts	488.23
Electricity—light, &c.	323.05
Electricity—thawing out services	8,474.84
Plumbers for thawing out services	300.51
Taxes—watershed property	841.36
New harness	40.00
Appraising property	10.00
Anti-rust paint	261.30
Clipping horse	4.00
Trucks used in thawing out services	430.35
Cast iron pipe	47,011.17
Service stock	143.46
Personal damages	500.00
Clay pipe	228.68
Inspection—water pipe	439.76
Wedges—wood and iron	35.63
Lawyer—searching	125.00
Telephone service	1,384.94

Masons' material	$ 1,191.10
Right of way for telephone line	600.00
Trees and plants	320.90
Stop boxes	2,532.08
Veterinary surgeon	50.00
Wooden blocks	50.00
New row boat	18.00
Rent, telephone poles at watershed	124.50
Sinking fund account	174,600.00
Re-paving street cuts	1,108.21
New wagons	200.00
New horses	465.00
General expenses	39.70
Hose	23.50
Fountain jets	80.15
Insurance	38.00
Repairs to houses	121.29
Extra for stenographer and typewriter	135.00
Steam heater for Briggs' house, watershed	275.00
Office furniture	36.50
Foundry work	23.40
Refunded—erroneous payments	52.42
General repairs	362.26
Total	$921,383.45
Less error in cash receipts in March and August and charged back	1.20
	$921,382.25

TRIAL BALANCE.

December 31st, 1904.

Cash	$ 132,051.38	
Construction	2,563,859.56	
Coupon Trust Fund	35.00	
High Pressure Water Bonds		$ 100,000.00
Coupon Bond Account		2,710,000.00
Registered Bond Account		7,167,000.00
Coupons Payable		35.00
Plumbers' Drafts		178.50
Stable Stock and Fixtures	6,198.35	
Petty Cash	306.07	
Office Furniture, Fixtures and Fittings	10,602.45	
Water Meter Account	5,422.81	
Department Meters	31,927.00	
Hydrant Account	23.50	
Insurance	357.35	
Bond and Mortgage	600.00	
Street Mains, Stock and Material	25,780.41	
Service Stock	3,607.39	
Real Estate, General	114,793.09	
Tool Account	7,782.66	
Meter Repair Stock	2,009.75	
High Pressure Water System	86,533 71	
Surplus and Deficiency	654.006.48	
New Water Supply	6,174,069.41	
Service Collection	555.00	
Advance Water Rent Collection	13,767.60	
Fractional Water Rent Collection	860 65	
Building Collection	490 71	
Special Water Collection	594.00	
Measured Water Collection	84,191.11	
Arrears Water Rent Collection	5,817.36	
Sundry Personal Collection	48,304.62	
Cedar Grove Reservoir Stock and Fixtures	1,302.90	
Track Elevation	787.11	
New Storage Reservoir	576.07	
Total	$9,977,213.50	$9,977,213.50

COMPARATIVE STATEMENT OF DISBURSEMENTS.

In 1903 and 1904.

	1903.	1904
Street Main Extension	$36,185.14	$21,354.55
Feeders	7,461.02	787.79
Reconstruction	3 234.80	3,422.84
General Maintenance and Repairs	12,249.18	11,327.48
Repair of Tools	1,221.32	955.31
General Expense	7,703.72	7,115.84
Handling Material	1,371.11	1,206.44
Engineer and Superintendent, Expense	11,306.01	11,689.02
Accounting Division Expense	29,293.31	29,022.11
Meter Division Expense	14,859.06	14,977.61
Distributing Reservoirs	7,085.13	6,354.72
Meter Repairs	2,128.91	4,220.84
Repair, Department Meters	1,148.00	2,638.95
Repair, Belleville Reservoir	338.75	63.61
Repair, South Orange Ave. Reservoir	177.33	462.72
Repair, Services	4,243.65	25,395.34
Repair, Hydrants, and Setting	3,485.72	7,668.50
Inspection	11,568.55	12,212.90
Stable Expense	6,609.65	6,607.82
Service Account	10,324.20	20,656.18
Pumping Stations	3,038.00	2,501.70
Maintenance New Water Supply	26,229.04	21,353.14
Miscellaneous Personal Charges, Labor	6,743.85	5,964.84
Stable Stock and Fixtures	459.90	665.00
Office Furniture	368.43	171.60
New Meters	18,100.00	13,907.38
New Hydrants	3,088.50	1,832.50
Insurance	686.22	
General Supplies	2,834.36	2,550.89
New Tools	36.30	572.69
Repair, Street Mains	876.35	815.33
Land for New Water Supply	40,000.00	
Sinking Fund	174,150.00	174,600.00
Interest on Water Bonds	402,555.00	403,155.00
New Storage Reservoir	846.12	576.07
Loss and Gain, Refunding, etc	668.37	815.29
Miscellaneous, Material, etc	12,871.66	103,760.25
	$865,546.66	$921,382.25

Accounts Receivable.

December 31st, 1904.

Advance water rent account	$13,767.60
Fractional water rent account	860.65
Measured water rent account	84,191.11
Special water account	594.00
Building water account	490.71
Arrears water rent account	5,817.36
Service Collection Account	555.00
Sundry personal account	48,304.62
Total	$154,581.05

Assets and Liabilities.

Cash Balance, December 31st, 1904	$ 132,051.88	
Property	8,949,218.77	
Accounts Receivable	154,581.05	
High Pressure System Account	86,533.71	
Track Elevation Account	787.11	
Coupon Trust Fund	35.00	
Coupon Bonds		$2,710,000.00
Registered Bonds		7,167,000.00
High Pressure Water Bonds		100,000.00
Coupons Payable		35.00
Plumbers' Drafts		178.50
Surplus and Deficiency	654,006.48	
Total	$9,977,213.50	$9,977,213.50

Schedule of Property, 1904.

Department of Water.

Belleville Pump House		$ 25,000.00
" Boiler House Extension		2,000.00
" Engineer & Firemen's Dwellings		10,000.00
" New Chimney		5,500.00
" Keeper's House		1,500.00
" Pumping Engine No. 1		5,000.00
" " " " 2		5,000.00
" " " " 3		15,000.00
" " " " 4		20,000.00
" Receiving Reservoir		133,645.05
" New Boilers		15,638.31
River Wall, Dock and Basin		25,000.00
Driven Wells		22,275.01
Drilled Wells		36,172.98
Cassion Wells		2,453.80
Belleville Reservoir Appurtenances		8,508.93
High Service Engine House		15,000.00
High Service Engine House Extension		2,500.00
New Boiler, Clifton Avenue		2,000.00
High Service Pumping Engine No. 2		5,000.00
High Service Pumping Engine No. 3		5,000.00
High Service Reservoir, South Orange Avenue		94,585.27
Low Service Reservoir		121,615.68
Street Mains, General	$1,415,394.42	
1904	21,354.55	
		1,436,748.97
Pumping Main No. 1		75,384.67
Pumping Main No. 2		38,569.78
Supply Main No. 1		124,618.15
Supply Main No. 2		66,499 54
Supply Main No. 2, Section A		40,724.42
Distributing Main No. 2		51,812.38
Extra High Service Main		27,452.67
Twelfth Ward Feeder		5,825.09
Ingraham Place Feeder		1,147.22
Bridge Street Feeder		1,828.16
Regular High Service Feeder No. 2		17,956.88
Regular High Service Feeder No. 2, Extension		9,934.24
Forest Hill Feeder		5,612.92
Roseville Feeder		18,952.99
Seventh Avenue Feeder		4,251.39
South Street Feeder		2,099.17
Fourteenth Avenue Feeder		4,390.35
Carried forward		$2,512,204.02

SCHEDULE OF PROPERTY—CONTINUED.

Brought Forward	$2,512,204.02	
Ferry Street Feeder	$6,170.88	
South Ninth Street Feeder	675.54	
Fourteenth Street Feeder	1,395.15	
Waverly Avenue Feeder	778.92	
Hawthorne Avenue Feeder	681.76	
Verona Avenue Feeder	1,560.00	
Special High Service Feeder	974.29	
Feeders$13,823.80		
1904 787.78		
	14,611.58	
Distributing Main No. 2, Extension	3,903.97	
Distributing Main No. 1	48.73	
High Service Main No. 1	46.85	
High Service Main No. 2	18,683.36	
Low Service Supply Main No. 3	1,111.17	
Weir at Watershed	1,063.84	
New Storage Reservoir Account	576.07	
		$2,564,435.63
REAL ESTATE		
No. 1. No. 128 Halsey Street	26,964.15	
" 5. Nominal	100.00	
" 6. Seventh and Summer Aves.	4,000.00	
" 12. Ground and Building for new City Stables	26,958.47	
" 13. Right of Way and Alley Millbrook Sewer	75.00	
" 14. Drift Street at Factory St., Nominal	20.00	
" 16. Clifton Avenue Pump House	6,000.00	
" 18. Low Service Reservoir, Nominal	1.00	
" 62. Hecker Street, Nominal	100.00	
" 53. South Orange Ave. Reservoir, Nominal	1.00	
" 54. Corner 14th Ave. and Ninth Street	15,000.00	
" 55. Corner 14th Ave. and Eighth Street	7,500.00	
" 56. Belleville Pump House and six Houses	11,883.64	
" 57. Opposite Pump House	1,693.92	
" 58. Belleville Reservoir, Nominal	1.00	
" 59. Part of Belleville Reservoir Property	532.50	
" 60. Back of Belleville Reservoir Property	11,113.86	
Carried forward	$ 111.944.54	$2,564,435.63

SCHEDULE OF PROPERTY—CONTINUED.

Brought forward	$ 111,944.54	$2,564,435.63
No. 61. Portion, Right of Way, Supply Main No. 2	$450.00	
" 62. Portion of Right of Way, Supply Main No. 2	339.00	
" 63. Portion of Right of Way, Supply Main No. 2	389.55	
Land for Drilled Wells, Belleville, N. J.	1,670.00	
		114,793.09
INVENTORY -		
Street Mains, Stock and Material	25,780.41	
Service Stock and Material	3,607.39	
Hydrants on Hand	23.50	
Water Meters on Hand	5,422.81	
Meter Repair Stock	2,009.75	
Tools	7,782.66	
Stable Stock and Fixtures	6,198.35	
Office Furniture, Fixtures and Fittings	10,602.45	
Cedar Grove Reservoir	1,302.90	
Petty Cash	306.07	
Water Meters owned and set by Department	31,927.00	
Insurance	357.35	
Bond and Mortgage	600.00	
		95,920.64
New Water Supply		6,174,069.41
Total		$8,949,218.77

Expended on Account of New Storage Reservoir and Thirty-six Inch Cast Iron High Service Supply Pipe Line.

To December 31st. 1904.

NEW STORAGE RESERVOIR, TUNNEL AND SIXTY INCH STEEL PIPE LINE.

Labor	$ 50,228.81	
Iron Pipe and Castings	82,247.33	
Inspecting Pipe	1,054.22	
Payments on Contracts	1,161,560.72	
Engineering Expense, &c.	24,491.10	
Interest on Loan	96,018.05	
Taxes	56.73	
Land	90,689.39	
Right of Way	1,550.00	
Expense of Condemnation	3,890.95	
Gate House	16,001.00	
		$1,527,783.30
THIRTY-SIX INCH SUPPLY PIPE LINE. Between South Orange Ave and Belleville Reservoirs.		
Labor	$ 44,353.81	
Iron Pipe and Castings	95,978.19	
Interest on Loan	37,884.77	
Inspecting Pipe	1,000.91	
Carting Pipe	3,729.95	
Right of Way	3,450.00	
Caulking Machine	490.00	
Miscellaneous Material	25,304.90	
Work at Second River, and South Orange Avenue and Eighth Street..	920.12	
Expenses	2,071.00	
Building Sewer by Town of Bloomfield	1,750.00	
Payment on Contract for Outlet Tunnel	11,777.88	228,711.53
Total		$1,756,494.83
Less Hay sold in 1901		158 00
		$1,756,336.83

Fund for the Construction of a Storage Reservoir.

December 31st, 1904.

CASH ACCOUNT.

Balance, January 1st, 1904		$4,647.76
Interest on investments	$3,500.00	
Rents, real estate	110.00	
		3,610.00
Total receipts for 1904		$8,257.76
Grant Dunn, for house and lot on Pequannock River	$1,700.00	
Horace Smith, for house and lot on Pequannock river	1,300.00	
Jno. H. H. Conklin, land in Vernon Township, Sussex County	1,000.00	
John F. Smith, land at Timber Brook, Rockaway, N. J.	3,000.00	
Fidelity Trust Company—Examination and Guaranty of title of John F. Smith property &c.	110.00	
James McCue—Services, repairs, &c.	139.98	
Total disbursements for 1904		$7,249.98
Balance to credit of account with City Treasurer, December 31st, 1904		$1,007.78

TRIAL BALANCE.

	Dr.	Cr.
Cash	$1,007.78	
Bond Account	50,000.00	
Ivy Hill Property	81,828.40	
Belleville Property	13,965.35	
Charlottesburgh Property	50,670.07	
Storage Reservoir Account		$197,471.60
	$197,471.60	$197,471.60

REAL ESTATE AND SECURITIES.

Registered Newark City Water Bond No. 28	$50,000.00
Ivy Hill Property, South Orange, N. J.	81,828.40
Belleville, N. J. property	13,965.35
Charlottesburgh, N. J., property	50,670.07
	$196,463.82

ANNUAL REPORT

OF THE

General Superintendent of Works.



REPORT OF

General Superintendent of Works.

Newark, N. J., December 31st, 1904.

To the Board of Street and Water Commissioners of the City of Newark.

GENTLEMEN.—In this, my tenth annual report of the operation of the departments under my charge, as General Superintendent of Works, I desire to thank all of the commissioners for the able support which they have given to me.

The growth of population of our city and the increase of the mileage of paved streets, makes the work of the departments greater each year; that this work has been economically done, I leave for you to judge.

The increased appropriation has permitted me to do much more work, in streets, cleaning and repairing, than has been done for years; this will be noticed by comparison with the reports of previous years.

The blacksmith shop was put into operation last February and has proved a wise move upon the part of the Board, all of the horses are shod in it—there are from fifty-five to sixty horses in the stable, the shop being close to the stable no time is lost by the horses going back and forth; repairing of wagons and carts is being done to some extent, only minor and emergency repairs.

The scavenger service has received considerable of my attention; the complaints, less than for former years, are be-

ing attended to promptly by the inspectors and the contractor remedies them at once; there has not been a second complaint from any source.

I herewith also submit for your inspection in a condensed form tabulated reports of the amount of work done in the various departments; the same compiled from records in my office; also the distribution of pay rolls of all the departments. A perusal of these will show a careful and intelligent system of records pertaining to work of all the departments under my supervision.

STREET REPAIRS OTHER THAN ASPHALT.

	NO. OF REPAIRS.	COST.
January		$.92
February		5.52
March	19	135.37
April	156	751.29
May	157	1,245.68
June	167	1,341.62
July	172	1,505.72
August	144	1,288.96
September	165	1,277.19
October	140	899.91
November	98	572.65
December	22	154.23
Totals	1,240	$9,179.06

Average cost of labor per repair, $7.40.

ASPHALT REPAIRS.

During the year 1904 there has been added to our equipment for keeping the asphalt streets in repair, a permanent plant located at the Summer Avenue Bath House yard, with all the fittings and tools to run it economically; this plant is to be used in making repairs in the Northern and Western parts of the city.

There has been purchased a new fire wagon to be used in connection with the new plant.

Since the Board made the settlement with the New Jersey Asphalt Company in September, 1904, by the terms of which

this department received $20,000.00 for the repairs to asphalt streets and to keep in repair, several of the streets of this company have been put in repair and the balance will be attended to as soon as the weather permits.

We have on hand at this time about two hundred and fifty tons of asphalt stored at the Summer Avenue yard.

The approximate cost of the new Plant was	$250.00
The cost of the new Fire Wagon was	130.85
" " " " Asphalt Wagon No. 1 was	388.54
" " " " Asphalt Wagon No. 2 was	427.70
(This was made by C. Currier & Sons of this city and it is larger and better than No. 1.)	
The approximate cost of the asphalt tools in use was	90.00
The cost of keeping the wagons and tools in repair was	309.27

More or-less repairs were made on seventy-five of the asphalt streets during the year, making a total of 6,598.65 yards laid.

The cost of labor for the year was	$4,085.74
The cost of material for the year was	1,829.90

REPAIRS TO ASPHALT STREETS.

1904.

	NO. YDS.
Astor street	5.74
Broad street	365.32
Bruce street	53.10
Barclay street	318.68
Bank street	5.74
Camp street	8.26
Chestnut street	.84
Clinton avenue	664.74
Clinton street	11.19
Crane street	15.17
Clifton avenue	175.85
Central avenue	56.42
Cedar street	6.93
Court street	121.42
Camden street	2.14
Charlton street	10.30
Elizabeth avenue	20.36
Elm street	158.55
E. Park street	126.81
Fulton street	9.75

	NO. YDS.
Franklin street	5.00
Garside street	32.03
Grant street	21.25
Gould avenue	63.66
Gouverneur street	6.45
Holland street	29.77
Halsey street	240.58
Humboldt street	2.98
Harvey street	35.36
Lincoln Park	2.32
Littleton avenue	**24.55**
Lafayette street	**189.61**
Livingston street	**46.81**
Milford avenue	**200.75**
Monmouth street	**12.47**
Murray street	**27,28**
Mt. Prospect avenue	**311.44**
Newton street	**27.81**
No. Canal street	**72.86**
No. Sixth street	**40.08**
New street	**15.49**
Nursery street	**10.42**
Ninth avenue	18.00
No. Seventh street	10.83
Orchard street	388.71
Park place	219.45
Pennington street	50.41
Pennsylvania avenue	527.66
Parker street	13.13
Quitman street	.89
South street	39.84
Somerset street	65.58
Sherman avenue	17.24
Summer avenue	121.32
So. Sixth street	86.23
Summit street	6.02
So. Eighth street	191.26
Sixth avenue	100.66
State street	56.68
So. Seventh street	230.69
So. Thirteenth street	120.07
Tichenor street	12.68
Thomas street	179.38
Thirteenth avenue	23.93

	NO. YDS.
Third street	11.58
Washington avenue	5.67
Washington place	81.11
Washington street	104.11
William street	11.26
Waverly avenue	65.15
Wakeman avenue	3.08
Walnut street	8.77
Warren street	263.95
Wright street	7.02
Totals	6,598.64
Total cast of labor streets and highways	$2,496.20
Total cost of labor, repairs to asphalt streets	1,589.47
	$4,085.67

STREET CLEANING AND REPAIRING.

	LOADS.	MILES.	COST.
Block pavements by machine	34,634	856.68	$19,758.70
Block pavements by hand	17,951	568.37	19,388.00
Telford pavements	708	10.66	578.92
Cobble	2,356	33.37	2,786.17
Asphalt and Brick and Wood	12,838	4,272.72	15,516.09
Asphalt and Brick by machine	203	26.48	169.88
Streets graded	681		972.40
Streets graded by machine	491	31.27	1,074.52
Gutters	811		608.92
Intersections	1,190		2,937.71
Miscellaneous	2,737		3,010.88
Bithulithic	134	17.86	135.60
Removal of Snow and Ice	73,934		14,806.12
Picking papers (23,012 bags)			1,966.76
Men working at Dumps			1,299.69
Helpers for Surveyors' Dept.			559.19
Carpenters and Helpers			1,397.20
Pavement Repairs—			
Cobble, 109			515.26
Block, 1,097			8,293.15
Brick, 44			326.31
Asphalt			2,496.24
Special laborers and foremen			6,105.22
Inspectors			734.50
Weekly Salaries			31,465.00

Telford Repairs—	LOADS.	MILES.	COST.
Clinton avenue			42.04
High street			68.55
Sussex avenue			27.53
So. Orange avenue			76.00
Warren street			23.58
Bloomfield avenue			70.00
Ogden street			1.84
	148,668	5,817.41	$137,211.97

The following permits were issued during the year:

Builders' permits to obstruct the streets	802
Sewer taps	1,607
Street openings	210
Public Service Corporation; Elec. and Gas Departments	8
N. Y. and N. J. Telephone Co.	109
Miscellaneous	191
Sidewalks	165
Total	3,092

All of the above are posted in books and are open to the inspection of any citizen.

Mileage of paved streets, December 31st, 1904.

Granite block	48.775	miles
Belgian block	12.215	"
Telford	22.965	"
Asphalt	51.095	"
Wooden block	.075	"
Brick	11.556	"
Cobble	9.364	"
Bithulithic	1.944	"
Total	157.989	"

The above includes the paved streets of the new annexed district of Vailsburgh, which are 3.74 miles of Telford and 0.08 miles of cobble. The dirt streets of this city are 87.786 miles and of Vailsburgh, 3.820 miles.

CROSS WALKS.

During the year, 41 new cross walks were laid, mostly in the annexed district. More are badly needed in that section.

Cross walks will be the first improvement asked for by the citizens of Vailsburgh.

I would recommend that all the bridge stone on streets to be paved this year be reserved for the use of the city, by so doing, the cost of new walks will be greatly reduced.

BRICK PAVEMENTS.

Some of the brick paved streets that were laid several years ago will need repairing the coming year. Brick for this work has been purchased and will be used as soon as the weather permits.

DEPARTMENT OF CROSS WALKS.

	NO. OF REPAIRS.	COST OF REPAIRS.	NO. OF WALKS.	COST OF WALKS.	TOTAL COST.
January	..		..	$80.00	$80.00
February	..		..	80.00	80.00
March	6	$116.04	..		116.04
April	20	247.74	5	111.85	359.59
May	17	185.67	4	80.75	266.42
June	18	215.06	2	34.91	249.97
July	41	332.38	4	94.77	427.15
August	34	285.56	6	75.28	360.84
September	23	181.61	4	78.15	259.76
October	14	126.11	11	205.12	331.23
November	20	208.86	1	13.59	222.45
December	3	60.00	4	97.53	157.53
Totals	196	$1,959.03	41	$951.95	$2,910.98
Average cost of repairing each walk					$10.00
Average cost of laying new walks					23.22

PUBLIC BATHS.

Considerable extra necessary work has been done upon and inside the public baths, during the year, in the way of roofing, painting, repairing boilers and installing heating plants, in the three houses, made necessary by the demand of the public, that the bath houses should be kept open all year around.

The attendance during the year has been as follows:

	MALES.	FEMALES.
Summer Avenue Bath House..	40,707	3,624
Walnut Street Bath House....	51,705	4,660
Morris Avenue Bath House....	60,803	7,224
Total	153,215	15,508

The receipts from the rent of rooms, shower baths, towels and suits were $841.70.

CARPENTER—1904.

STREETS AND HIGHWAYS.

REPAIRS.

Repairs, City Hall Office	$22.00
Construction New Shed at City Stables	37.50
Alterations and Repairs William Street Office.....	83.00
Construction of Tool House, Dept. of Street Repairs....	18.00
Repairs Surveyor's Dept.	1.50
Repairs, Tools	377.00
Repairs, City Stables	42.00
Repairs, Street Signs	3.00
Alterations in New Waiting Room at Old Burying Ground	53.00
General Jobbing	840.00
Totals.....	$1,477.00

SEWERS AND DRAINAGE.

Repairs at Pumping Station	$74.00
Repairs, Hamburg Pl. Culvert	24.00
Repairs, Peddie Street Ditch	60.00
General Jobbing	32.50
Totals.....	$180.50

PUBLIC GROUNDS.

Repairs to Benches	$3.00
Total.....	$3.00

BRIDGES.

During the past year a new bridge was constructed on the old Bloomfield road, over the canal, the old bridge having gone down. This was done by contract at a cost of $790.67. The bridge, over the canal, near the City Dock was completely overhauled, replanked and new girders were put in at a cost of $734.51.

BRIDGES.

Repairs Plane Street	$14.25
" Bloomfield road	168.89
" River street	4.25
" Mulberry street	33.80
" Miller street	10.25
" Commercial street	15.25
" South street	12.50
" Washington street	3.00
" Jersey street	97.69
Sundries	12.75
Total	$372.63

PUBLIC BATHS.

Repairs Summer Avenue Bath	$3.00
" Walnut Street	21.00
Sundries	3.00
Total	$27.00
Total cost of labor	$2,060.13

DEPARTMENT OF SEWERS AND DRAINAGE.—1904.

	LOADS.	
Basins cleaned (3,762)	6,740	$7,053.03
Sewers cleaned	1,950	6,961.26
Chambers cleaned at Pumping Station	1,875	441.00
Pumps cleaned	111	239.75
Repairing Floor at Pumping Station		38.75
Basins repaired (121)		511.89
General Repairs		244.90
Examining Sewers and Basins		1,927.50
Ditches cleaned		641.75
Surveyor's helpers		418.50
Removing Snow from Basins		494.05
Carpenters and Helpers		192.50
Miscellaneous		546.62

Ditches repaired	128.25
Leveling bank at Peddie Canal	217.60
Building Basins	404.58
Building Manholes	239.82
Shifting Manholes	107.50
Repairing Forge at Blacksmith Shop	10.50
Cutting Weeds at Peddie Ditch	30.00
Building Stone Culvert in Elizabeth Avenue	57.50
Putting heads on basins in North Canal street	18.75
Putting heads on basins Mullberry and Market streets	20.00
Sewer Repairs, Broad street	538.60
" " Ferry street	3.50
" " Plane street	231.50
" " Peddie street	812.50
" " Wickliffe street	47.60
" " Prince street	14.75
" " Congress street	20.20
" " Lafayette street (333)	1.00
" " Green street	2.00
" " Fourth avenue	240.57
" " Lister avenue	13.75
" " Murray street	3.00
" " Congress street (106)	20.25
" " Monmouth street (86)	8.00
" " Congress street (92)	22.50
" " Bergen street	5.25
" " Centre street	5.75
" " Market street	9.75
" " Central avenue	8.50
" " Elizabeth avenue	15.00
" " West Kinney street	25.25
" " Mechanic street	3.00
" " Beacon street (26)	15.50
" " Centre street (20)	3.25
" " Green street	20.25
" " Lafayette street	64.75
Weekly salaries	14,205.97
Total	$37,297.94

REPORT ON SIDEWALKS—1904.

New walks laid by property owners	98,255	sq. ft.
Walks relaid by property owners	115,650	"
Concrete walks laid by property owners	225,740	"
New walks laid by order of board	23,669	"
Walks relaid by order of board	5,725	"
Walks laid by ordinance	14,000	"
Total	483,039	"

Monthly Distribution of Pay Rolls from January 1st to December 31st, 1904.

STREETS AND HIGHWAYS.

	Foremen	Stable-men	Time Keeper.	Clerk.	Car-penter and Help	Inspec-tors.	Clerk of Stone Yard.	Ma-chinist.	Keeper of Tools.	Keeper of Har ness.	Laborers.	Drivers	Horse and Wagon Hire.	Street Repairs.	Black-smiths.	Sur-veyor's Help.	Pain-ter.	Sun-dries.	Totals.
January...	$1,008.00	$311.00	$100.00	$100.00	$147.00	$369.00	$48.00	$48.00	$48.00	$60.00	$4,854.48	$876 41	$1,679.02	$.92	$108 00	$5.50		$15.40	$9,778.73
February..	1,120.00	318.00	100 00	100.00	144.00	385.00	54 00	54.00	48.00	60.00	3,860.16	627 32	306.76	5.52	144.00	6 00		2.00	7,334 76
March.....	1,120.00	318 00	100.00	100.00	142.50	385 00	54.00	54.00	48.00	60.00	3,913.27	748 07	477.40	185.37	144 00	28 50			7,898.11
April.....	1,380.00	397.50	125.00	125.00	85 50	481.25	67 50	67.50	60.00	75 00	5,870.81	1,066 50	2,073 09	1,045.84	180 00	42.00			13,152.86
May.....	1,165 00	318.00	100 00	100.00	130 50	385.00	54 00	54 00	48 00	60.00	5,865 92	1,044 55	1,988 82	1 734.48	188 0	39 25			13,313.03
June	1 126.00	318.00	100.00	100.00	102.00	385.00	54 00	54.00	48.00	60.00	4,687.17	801.89	1,341.96	1,781.83	150.00	51.00		130.25	11,391.10
July.....	1,454 00	397.50	125.00	125.00	155.00	481.25	67.50	67.50	60.00	75.00	6,277.93	1,018.29	1,553.47	1,956.20	180.00	67.00		46.00	14,106.64
August...	1,141.00	318 00	100.00	100.00	129.00	443 00	54.00	54.00	48.00	60.00	5,374.28	865.60	1 512 66	1,689.75	144.00	47.00		140.00	12,160.29
September.	1,120.00	318 00	100.00	100.00	135 00	449.00	54.00	54.00	48.00	60.00	5,302.24	951.59	1,124.28	1,708.63	144.00	49 94		77.00	11,795.68
October....	1,400 00	397.50	125 00	125.00	60.00	471.25	67.50	67.50	60.00	75.00	7,330.69	1,168 25	1,594.71	899.91	171.00	65 00	$32.00	229.25	14,339.56
November..	1,120.00	318.00	100.00	100.00	95.00	337.00	54.00	54.00	48.00	60.00	5,308.59	845.58	1,142 44	572.65	144.00	50.00	14.00	77.00	10,440.26
December.	1,484.00	397 50	125.00	125.00	151.50	448.25	67.50	67.50	60.00	75.00	6,304.59	1,060.94	1,049.22	154.23	180.00	36.00		85.00	11,771.23
Totals...	$14,588.00	$4,127.00	$1,300 00	$1,300.00	$1,477.00	$5,020.00	$696 00	$696 00	$624.00	$780.00	$64,950.13	$11,013.09	$15,848.33	$11,675.33	$1,827.00	$487.19	$46.00	$751.90	$187,211.97

Monthly Distribution of Pay Rolls from January 1st to December 31st, 1904.

SEWERS AND DRAINAGE.

	Foremen.	Engineers at Pumping Station.	Firemen at Pumping Station.	Laborers at Pumping Station.	Gate Tender	Inspectors of Taps.	Clerk.	Laborers on Sewers.	Drivers on Sewers.	Laborers on Basins	Drivers on Basins.	Laborers' Detail.	Mason and Help. General Repairs.	Sewer Repairs.	Surveyor's Help.	Carpenters and Help.	Sundries.	Totals.
January...	$216.00	$223.44	$207.50	$110 00	$60.00	$164 28	$92 00	$221.00	$35.25	$317.50	$24.00	$122 50	$55.55	$22.25	$31.00		$23.50	$1,925 77
February..	240.00	223.44	210.00	110 00	60.00	164.28	96 00	347.75	54.25	196.05	80.00	105,25	39.00	264.50	18.00			2,178 52
March....	240.00	223.44	210.00	112 00	60.00	164 28	96.00	474.75	69.25	404.42	147.50	150 75	28.50	353.85	25.00		2.40	2,762.14
April.....	300.00	225.55	262.50	140.00	75 00	205.35	120.00	621.06	53.75	594.98	206.00	189.25	94.40	804.00	31.50	$72.00		3,995.34
May.....	240.00	169.69	210 00	112 00	60.00	164 28	96.00	428.47	60.50	519.52	187 50	158.25	267.31	477.45	34 00	1.50		3 186.47
June.....	240.00	223 44	210.00	112 00	60 00	164 28	96.00	701.42	124 50	491.65	177.25	174.75	237.38	64.75	36.00	27 00	.34	3,140.76
July.....	300 00	274.30	262.50	118.50	75.00	205.35	120.00	847.28	193 00	608 44	218 00	202.00	271.17	33.25	47.00	..		3,775.79
August....	240.00	222.19	210.00	111.00	60.00	164.28	96 00	688 66	119.75	492.35	191.50	160.75	264.42	25.25	40.00	3.00		3,089.15
September	240.00	220.94	210.00	112.00	60 00	164.28	96 00	642 81	140.50	498.67	178.00	157 00	272.25	21.00	36.00		7.31	3,056.76
October....	300.00	279.30	262.50	140.00	75 00	205.35	120.00	1,024 50	151 75	717.60	258.25	192 50	205 32		56.00	35 00	38.22	4,061.29
November.	240 00	223.44	210.00	114.00	60.00	164 28	96.00	643.75	147.50	459.28	150.00	148.25	174.50	15 00	30.00		10.34	2,886 34
December..	300.00	279.30	275.00	130 00	75.00	205.71	120.00	698.25	156.00	465.35	91.50	165.25	172.00	30 25	34.00	42.00		3,239.61
Totals...	$3,096.00	$2,788.47	$2,740.00	$1,421.50	$780.00	$2,136.00	$1,244.00	$7,339.70	$1,306.00	$5,765.81	$1,879.50	$1,926 50	$2,081.80	$2,111.55	$418.50	$180.50	$82 11	$37,297.94

Distribution of Pay Rolls.

CROSS WALKS.

	Supt.	Laborers.	Drivers.	Totals.
January	$80.00			$ 80.00
February	80.00			80.00
March	80.00	$27.76	$8.28	116.04
April	100.00	215.43	44.16	359.59
May	80.00	160.20	26.22	266.42
June	80.00	146.74	23.23	249 97
July	100.00	303.23	23.92	427.15
August	80.00	261.52	19.32	360 84
September	80.00	159.75	20.01	259.76
October	100.00	201.10	30.13	331.23
November	80.00	123.36	19.09	222.45
December	100.00	50.63	6.90	157.53
Totals	$1,040.00	$1,649.72	$221.26	$2,910.98

PUBLIC GROUNDS.

	Supt.	Laborers.	Drivers.	Painter.	Carpenter.	Totals.
January	$72.00	$177.65				$249.65
February	72.00	145 56	$1.61			219.17
March	72.00	74.30				146.30
April	90.00	211.20	7.59	$44.45		353.24
May	72.00	262.40	44.39	8.40	$3.00	390.19
June	72 00	253.20	44.62			369 82
July	90.00	345.00	62.56			497 56
August	72.00	267.60	49.68			389.28
Sept	72.00	245.20	46.46			363 66
Oct	90.00	278.40	55.66			424.06
Nov	72.00	108.00	13 57			193.57
Dec	36 00					36.00
Totals	$882.00	$2,368.51	$326.14	$52.85	$3.00	$3,632.50

PUBLIC BATHS.

	Supt.	Asst's	Firemen.	Matrons.	Carpent'rs.	Totals.
April....			$75.00			$75.00
May.....	$165.00	$115.00	137.50	$24.00	$6 00	447.50
June ...	216.00	180.00	180 00	48.00		624.00
July.....	279.00	232.50	232.50	60 00	9.00	813.00
August..	234 00	195.00	195.00	48.00	12 00	684.00
Sept.....	234.00	195 00	195.00	48 00		672.00
Oct.....	274.50	228.75	228.75	60.00		792.00
Nov.....	216.00	180 00	180.00	48 00		624.00
Dec.....	270.00	225.00	225 00	60.00		780.00
Totals.	$1,888.50	$1,551.25	$1,648.75	$396.00	$27.00	$5,511.50

REPAIRS TO ASPHALT STREETS.

	Foremen.	Laborers.	Drivers.	Horse and Wagon Hire.	Totals.
October	$90.00	$529 90	$65.55	$44.54	$729.99
November	72.00	368.70	40.26	41.42	522 38
December	90.00	188.25	29.15	29.70	337.10
Totals.....	$252.00	$1,086.85	$134.96	$115 66	$1,589.47

DISTRIBUTION OF PAY ROLLS.

SCAVENGER.

	INSPECTORS.
August	$340.80
September	340.80
October	426.00
November	340.80
December	426.60
Total.....	$1,875.00

BRIDGES.

	Carpenter.	Laborers.	Horse and Wagon Hire.	Painter.	Drivers.	Totals.
January.						
February						
March...						
April....	$22.50	$16.00				$38.50
May.....	3.00					3.00
June	15.00	1 25				16.25
July.....	18 00	20.84	$0.96			39.80
August..						
Sept....	6.00	108.03	2.50		$1.53	118.06
Oct	12.00	22.83		$16.00		50 83
Nov.....	45.00	58.20			2.99	106 19
Dec.....						
Totals.	$121.50	$227.15	$3.46	$16.00	$4 52	$372.63

DISTRIBUTION OF PAY ROLLS.

SIDEWALKS.

	CLERK.
January	$72.00
February	72.00
March	72.00
April	90.00
May	72.00
June	72.00
July	90.00
August	72.00
September	72.00
October	90.00
November	72.00
December	
Total	$846.00

DISTRIBUTION OF PAY ROLLS.

WHARVES.

	LABORERS.
May	$3.00
Total	$3.00

RECAPITULATION.

Streets and Highways	$137,211.97
Sewers and Drainage	37,297.94
Crosswalks	2,910.98
Public Grounds	3,632.50
Public Baths	5,511.50
Repairs to Asphalt Streets	1,589.47
Scavenger	1,875.00
Bridges	372.63
Wharves	3.00
Sidewalks	846.00
Total	$191,250.99

POLES, WIRES, CONDUITS AND MANHOLES.
PUBLIC SERVICE CORPORATION OF N. J.

	WOOD.	IRON.	
Number of poles Dec. 31, 1903	36	4,463	
" " erected during year 1904	0	236	
" " removed during year 1904	0	0	
" " Dec. 31, 1904	36	4,699	
Number of poles, wood and iron			4,735
Number of miles of cable, aerial	500,000 C. M.	67.30	
" " " "	211,600 "	35.51	
" " " "	750,000 "	.14	
" " " "	1,000,000 "	.24	
			103.19
Number of miles of wire, aerial	1-0 trolley		
" " " "	2-0 trolley		
			99.26
Number of miles of cable, in subways	1,000,000 C. M.	16,763	
" " " "	750,000 "	1.872	
" " " "	500,000 "	7.417	
" " " "	2-0 3 Cond.	11.22	
" " " "	1,000,000 C. M. Bare Copper.	10.141	47.413
Number of miles of conduits, Dec. 31, 1903			6.08
" " single ducts, Dec. 31, 1903			95.885
" " conduits, Dec. 31 1904			9.97
" " single ducts, Dec. 31, 1904			132.255
Number of manholes, Dec. 31, 1903			99
Number of manholes Dec. 31, 1904			158

UNITED ELECTRIC COMPANY OF NEW JERSEY.

	WOOD.	IRON.	
Number of poles Dec. 31, 1903	4,882	8	
" " erected during year	531	0	
" " removed during year	226	8	
" " replaced during year	165	0	
Number of poles Dec. 31, 1904, wood			5,195
Number of miles of cable, aerial		0	
" " " in subways		69.8	
			69.8
" " wire, aerial		567.8	
" " " in subways		0	
			567.8

Number of miles conduits, Dec. 31, 1903	6.14
" " single ducts, Dec. 31, 1903	90.9
" " conduits, Dec. 31, 1904	6.6
" " single ducts, Dec. 31, 1904	97.5
Number of manholes, Dec. 31, 1903	278
Number of manholes, Dec. 31, 1904	301

NEW YORK & NEW JERSEY TELEPHONE COMPANY.

	WOOD.	
Number of poles Dec. 31, 1903	3,044	
" " erected during year	177	
" " replaced during year	112	
" " removed during year	4	
Number of poles Dec. 31, 1904		3,217
Number of miles of cable, aerial	12.59	
" " " in subways	67.71	
		80.30
" " wire, aeriel	950.67	
		950.67
Number of miles of conduits, Dec. 31, 1903		27.98
" " single ducts, Dec. 31, 1903		143.95
" " conduits, Dec. 31, 1904		29.04
" " single ducts, Dec. 31, 1904		151.51
Number of manholes, Dec. 31, 1903		316
Number of manholes, Dec. 31, 1904		340

NEWARK TELEPHONE COMPANY.

Number of poles Dec. 31, 1903	454	
" " erected during year	2	
" " removed during year	2	
" " replaced during year	9	
Number of poles Dec. 31, 1904		454
Number of miles of cable, aerial	4	
" " " in subways	22.1	
		26.1
" " wire, aerial	417	
" " " in subways	1,018	
		1,435
Number of miles of conduits, Dec. 31, 1903		8
" " single ducts, Dec. 31, 1903		45
" " conduits, Dec. 31, 1904		8.1
" " single ducts, Dec. 31, 1904		45.25
Number of manholes, Dec. 31, 1903		77
Number of manholes, Dec. 31, 1904		78

AMERICAN TELEPHONE AND TELEGRAPH COMPANY.

Number of poles, Dec. 31, 1904, wood	254
Number of miles of wire, aerial	311.32

WESTERN UNION TELEGRAPH COMPANY.

Number of poles, Dec. 31, 1904, wood	597
Number of miles of cable, aerial	4.3
Number of miles of wire, aerial	482.38

NEWARK DISTRICT TELEGRAPH COMPANY.

	WOOD.	
Number of poles Dec. 31, 1903	10	
" " turned over to Newark Tel. Co.	6	
Number of poles Dec. 31, 1904, wood		4
Number of miles of cable, aerial	.75	
" " " in subways	2.25	3
" " wire, aerial	8	
" " " in subways	221	
		229

POSTAL TELEGRAPH CABLE COMPANY.

This Company has no poles.

Number of miles of wire, aerial	123
" " " in subways	41

POLICE DEPARTMENT SIGNAL SERVICE.

	WOOD.	
Number of poles Dec. 31, 1903	134	
" " removed during year	9	
Number of poles Dec. 31, 1904		125
Number of miles of cable, aerial	.74	
" " " in subways	8.86	
		9.60
" " wire, aerial	180.75	
" " " in subways	91.47	272.22

FIRE DEPARTMENT SIGNAL SERVICE.

	WOOD.	
Number of poles Dec. 31, 1903	675	
" " erected during year	6	
" " removed during year	14	
Number of poles Dec. 31, 1904		667
Number of miles of cable, aerial	.1	
" " " in subways	15.56	
		15.66
" " wire, aerial	122	
" " " in subways	142.37	
		264.37

RECAPITULATION.

Poles Dec. 31, 1903, wood	10,086	
Poles Dec. 31, 1903, iron	4.471	
		14,557
Poles, Dec. 31, 1904, wood	10,549	
Poles, Dec. 31, 1904, iron	4,699	
		15,248
	MILES.	
Cable, aerial	123.67	
Cable, in subways	233.693	
Wire, aerial and in subways	4,776.02	
Conduits, Dec. 31, 1903	48.20	
Conduits, Dec. 31, 1904	53.71	
Single duct, Dec. 31, 1903	385.735	
Single duct, Dec. 31, 1904	426.515	
Manholes, Dec. 31, 1903		770
Manholes, Dec. 31, 1904		877

Respectfully submitted,

JOHN H. HUEGEL,

Inspector of Poles and Wires.

Respectfully yours,

J. C. MUNDY,

General Superintendent of Works.

REPORT OF ENGINEER OF DEPARTMENT OF STREETS AND HIGHWAYS.

To the Honorable the Board of Street and Water Commissioners:—

GENTLEMEN: I herewith respectfully submit my annual report for the year ending December 31, 1904; embodying the street and highway improvements, and other matters which may be of interest.

STREET IMPROVEMENTS.

PAVINGS.

During the year only nine contracts were awarded, for which the sum of $152,192.32 was expended within that time; two of the pavings remained unfinished, that of New Jersey Railroad avenue and Peshine avenue. Six pavings for which the contracts had been awarded in 1903, and upon which practically no work was done in that year, were also completed during 1904, their cost amounting to $103,613.29, as per payments to the contractors.

There were five additional pavings done by private parties, with the consent of the Board and executed in accordance with the official form of contracts and specifications.

The quantity of paving done is as follows:

	PUBLIC.		PRIVATE.	
	Miles.	Sq. Yds.	Miles.	Sq. Yds.
Granite, on Concrete.....	1.156	17,280		
Granite, on Sand.....	0.201	4.517	0.188	3 450
Brick.....	1 737	34,793	0.035	366
Bitulithic.....	1.265	25,286	0.050	1,032
Wood	0.075	1,278		
Telford.....	0.458	8,722	0.050	1,013
Total..... ...	4.892	91,876	0.318	5,861

Total 5.21 miles; 97,737 square yards.

See table No. 1 for more itemized statement.

The amount paid to inspectors on city work, is $4,889.50; making an additional cost of .053 cents per square yard of paving or 1.9 per cent. of the contract cost.

The average price paid, per lineal foot, for furnishing and setting new blue-stone curb, and resetting old curb, is as follows:

New 20x4 inch quarry cut, in concrete	$0.68
New 20x4 inch quarry cut, in sand	0.47
New 16x4 inch quarry cut, in concrete	0.62
Old curb redressed, in concrete	0.24

For furnishing and setting new granite curb:

New 20x7 inches fine pointed, in concrete	$1.30
New 20x7 inches fine pointed, in sand	1.05

Amount of the different kinds of street pavement on January 1, 1905:

	MILES.	SQ. YDS.
Sheet Asphalt	51.095	1,035,370
Granite Block	48.775	944,240
Telford	19.225	255,972
Trap-Rock or Belgian Block	12.215	208,812
Brick	11.557	240,673
Cobble	9.284	157,081
Bitulithic	1.945	39,470
Wood Block	0.075	1,278
	154.171	2,882,896

Including 6.46 miles of Telford pavement which was laid by the county; lying in Frelinghuysen, Central, Park and Bloomfield avenues.

There are about 88 miles of unpaved streets within the present city limits.

With the annexation of the Borough of Vailsburgh, on January 1, 1905, the mileage of improved streets will be increased, as follows:

	Miles.
Graded	12.10
Paved, with Telford	3.74
Paved with Cobble	0.08
Total miles	15.92

Including 2.15 miles of Telford pavement, which was laid and is maintained by the county; lying in South Orange avenue, Maple avenue and Grove street.

Table No. 2 shows the average price paid, per square yard, for the different kinds of street pavement, from 1891 to 1905.

GRADING, CURBING AND FLAGGING.

There were five contracts awarded during the year, comprising North Eighth, South Nineteenth, Bergen, Hunterdon and Ridge streets; with an estimated cost of $17,638.25. The improvement of North Eighth street is the only one completed; the amount paid the contractor was $3,126.30. There was practically no work done on the other contracts, as they were not awarded until November 3rd.

The tax appropriation for this class of improvement is entirely inadequate, considering the large territory of the city; now containing about 22 square miles or 14,080 acres with an increase of 860 acres when the Borough of Vailsburgh is annexed.

The contract for furnishing and laying flagstone not provided by ordinance, was awarded to David Harper on April 14th, for one year; for the following prices:

	Sq. Ft.
New flag-stone 4 ft. wide, 2 in. thick	0.16
New flag-stone 5 ft. wide, 2½ in. thick	0.17
New flag-stone 6 ft. wide, 3 in. thick	0.17
Relaying old flag-stone	0.03
New 20x4 in. curb, per lin. ft.	0.60
New 16x4 inch curb, per lin. ft	0.50
Resetting old curb, per lin. ft	0.05
Repaving gutters, per sq. yd	0.50
Extra filling or excavation, per cub. yd	0 50

The laying of a concrete walk along the easterly side of Military Park, which was contracted for on December 17, 1903, was commenced in May of this year; the amount paid to W. W. Schouler, contractor, was $2,146.60. The price per square foot being 14 cents.

In connection with the abolishment of the grade crossings of the Morris and Essex Railroad, several of the contracts

for the lowering of streets, which had been awarded in the previous year were completed in 1904; the amount expended is as follows:

Ogden street, in 1903	$1,972.43
Ogden street, in 1904	809.68
High street, in 1904	3,812.85
Morris and Essex Railroad avenue, east and west of High street	1,228.69
Broad street	1,397.28
Total	$9,220.93

The following is a list of street openings confirmed during the year:

Name.	Location.	Damages Awarded.	Total Cost.	Assessed on Properties	Assessed on City.
Bergen St.....	Custer Ave. to Renner Ave....	$1080.18	$1458.90	$704.00	$754.90
Hunterdon St...	" " " "	900.00	1276 45	700.00	576.45
Chadwick Ave..	413 ft. South of Clinton Ave. to Hawthorne Ave.....	15736.21	17042.80	10901.40	6141.40
Bigelow St.....	Peshine Ave. to Chadwick Av	10217 00	11205.70	3524.42	7681.28

In the Bigelow street opening an allowance had to be made for the removal of a house.

My estimate amount of damages for the opening of Chadwick avenue and Bergen street, in a statement made to the Committee on Streets and Highways, was $25,000.

Table No. 3 shows a list of all the street openings from 1894 to 1905. The total cost was $296,201.69; the amount assessed on properties was $201,382.07, or an average 68 per cent., the difference was assessed on the city at large. The nominal award of damages amounted to $279,243.58, or an average of 94 per cent. of the total cost.

MISCELLANEOUS.

The work upon the Third Section of eliminating the grade crossings along the line of the Morris and Essex Railroad and its branch to Montclair, progressed satisfactorily during the year considering the heavy rock-cut. On June 17th the

Delaware, Lackawanna and Western Railroad Company received the sum of $150,000 from the city, being one-half of the amount to be contributed by the city towards the completion of this section. The first passenger train was run to Hoboken through the depression in section three, on the 11th day of December.

Work on Section Two was commenced in May and was carried on as rapidly as possible; it will hardly be completed at the end of the ensuing year, especially so if the Morris Canal is not abandoned.

It was impossible to do much in the line of making a plane and topographical survey of the territory contained in the so-called Clinton Annextion No. 2; owing to the small office force, and the amount of other work not in connection with street improvements. Upon the other hand, it is not encouraging to the city to lay out a system of streets, when property owners ignore such plans, and lay out and open streets which suit their own private interests.

The staff in the office at the close of the year is:

LOUIS C. DITTLER, *Principal Assistant.*
WILLIAM A. HOWELL, *Track Elevation Work.*
CHARLES A. STILLGER, }
WALTER W. KANE, } *Assistants.*
DAVID CRABB, }
CHARLES A. SLOAN, }
GEORGE C. BRANDLY, *Principal Asst. in Office.*
ARTHUR U. SCHIENER, *Asst. in Office.*

Both of these are in joint service of the Street and Sewer Departments.

Respectfully,

ERNEST ADAM,

Engineer of Department of Streets and Highways.

TABLE NO. I—STREETS PAVED IN 1904.

	Paved.	Location.	Material.	Length.	Sq. Yards.	Cost per Sq. Yard.	Final Estimate	Total Cost per Comptroller.	Assessment on Property.	Assessment on City.	Contractors.	Character of Foundation Laid.	Remarks.
	...ew st.....	Elizabeth ave. to Johnson ave.....	Oblong	422	1,902	$2 15	$4,007.71				J. R. Shanley	Sand.	
2	...st.....	Orange st. to Sussex ave.....	Gran. B'ck	640	2,525	2.45	6,797.30	$7,425.40	$5,599.05	$1,826.35	" "	"	Con. aw'd 1903
3	N J R R ave. East	Market st. to Tichenor st.....	"	4,200	12,000	2.70	32,085.00				" "	Concrete.	Not compl'ted
	" " " West	Pennington st. to Murray st.....	"	600									
4	Plane st.....	Market st. to William st.....	"	915	3,060	2 78	11,735.34				" "	"	
5	Aqueduct alley..	Clifton ave. to Eighth ave.....	Brick	537	1,020	2 15	3,283 27	3,899 95	3,556.08	343.87	" "	"	Con. aw'd 1903
6	Eleventh ave....	Fairmount ave. to S. Eleventh st...	"	1,504	6,416	1.95	14,004 05				Wm. Van Keuren	"	" " "
7	Peshine ave.....	Waverly ave. to Bigelow st.....	"	730	2,800	2 15	9 209.60				Newark Pav'g Co.	"	Not compl'ted
8	Roseville ave....	Bloomfield ave. to Newbold st.....	"	2 855	12,371	2 33	31,451.48				" " "	"	
9	Sylvan ave.....	Washington ave. to Summer ave...	"	2 042	8,096	2 33	22,146.44	23,512.90	20,032.11	3,480.79	" " "	"	Con. aw'd 1903
10	Seymour ave.....	Clinton ave. to Run on st.....	"	1,503	5,140	2 15	12,652.75				" " "	"	
11	Br'men st.....	Hamburg pl. to Magazine st.....	Bitulithic	1,466	4 897	2 25	12,192.85	12,062.90	11,158.96	1,793.95	Warren Bros. Co.	"	
12	Clinton ave.....	Chadwick ave. to City Line.....	"	4,528	17,194	2 35	50,978.98				" " "	"	Con. aw'd 1903
13	Elwood ave.....	Summer ave. to Mt. Prospect ave..	"	693	3 255	2 35	8,342 68				" " "	"	
14	" "	Washington ave. to Summer ave...	Telford	732						...	Thos. A. O'Connor	"	
	" "	Mt Prospect ave to Old Rd to Blo'mf'd	"	1 685	8,732	1 09	19,314.91				" " "	"	
15	West Park st.....	Broad st. to Halsey st.....	Wood	397	1,278	3 76	6,408.19	7,201.75	5,453 46	1,748.29	U. S. Wd. Pre. Co.	"	Con. aw'd 1903
		Grand Total		25,829	91,876		$255,805.61						

STREETS PAVED BY PRIVATE PARTIES.

Streets Paved.	Location.	Material.	Length.	Sq. Yards.	Contractors.	Character of Foundation Laid.	Remarks.
Alyea st.....	Elizabeth st. to Darcy st.....	Oblong Granite Block	490	1,624	J. R. Shanley	Sand	For Hensler Brewing Co. & others.
St. Charles st.....	Ferry st. to George st.....	" "	475	1,826	" "	"	For Central R. R. Co. & Thatcher Co.
Amity pl.....	Seventh ave.	Brick	183	366	David Harper	Concrete	For St. Lucy R. C. Church & others.
Branford pl.....	Halsey st. to 284 feet Easterly...	Bitulithic	284	1,082	Warren Bros. Co.		For New City Hall Commission.
Delavan ave	Mt. Prospect ave. to Clifton ave.	Telford	265	1,018	Thos. A. O'Connor		For H. Heller.

TABLE No. 2.—AVERAGE PRICE PAID, PER SQUARE YARD, FOR THE DIFFERENT KINDS OF STREET PAVEMENT, FROM 1891 TO 1905.

	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
Granite Block on Concrete...		$3.29	$3.59	$3.03	$2.91	$2.18	$2.22	$2.20	$2.36	$2.78	$2.68	$2.78	$3.15	$2.79
" " " Sand.....	$2.50	2.38	2.38	2.40	2.08	1.82	1.46	1.49	1.61	1.85	1.78	1.96	2.24	2.30
Sheet Asphalt 6" concrete, 1½" binding, 2" wearing surface.....	2.86	2.87	2.85	2.80	2.70	2.58	2.35	1.56	1.91	2.12	1.84	1.90	1.97	
Fire-Clay Brick or Block, concrete filler					2.25	2.15					2.38			2.38
Fire-Clay Brick or Block, sand filler.....						2.14					2 25	1.98	2.10	
Shale Brick or Block, cement filler.....					2.19		2.03	1.75						2.15
Shale Brick or Block, sand filler.....										1.95		2.10	1.92	
Telford—10" thick.....											.97	.97	.99	1.09
Bitulithic—6" foundation, 2" wearing surface.....													2.25	2.25
Wood-Block, 4" thick, 5" concrete.....														3.76
Trap Rock, oblong, on concrete.....					2.75									
Trap-Rock oblong, on sand.	2.06	2.22	2.24	1.77	1.92									
" square, "	1.69	1.68												
Cobblestone, on concrete....				2.39										
" on sand.....		1.20	0.72			...								

TABLE NO. I—STREETS PAVED IN 1904.

	Streets Paved.	Location.	Material.	Length.	Sq. Yards.	Cost per Sq. Yard.	Final Estimate	Total Cost per Comptroller.	Assessment on Property.	Assessment on City.	Contractors.	Character of Foundation Laid.	Remarks.
1	Bigelow st.....	Elizabeth ave. to Johnson ave.....	Oblong	422	1,992	$2.15	$4,607.71				J. R. Shanley	Sand.	
2	Jay st.....	Orange st. to Sussex ave.....	Gran. B'ck	640	2 525	2.45	6.797.36	$7,425.40	$5,599.05	$1,826.35	" "	"	Con. aw'd 1903
3	N J R R ave East	Market st. to Tichenor st.....	"	4,590	12,600	2.79	42,685.00				" "	Concrete.	Not compl'ted
	" " " West	Pennington st. to Murray st.....	"	600							" "		
4	Plane st	Market st. to Willam st.....	"	915	3,060	2 78	11,735.84				" "	"	
5	Aqueduct alley ..	Clifton ave. to Eighth ave.....	Brick	537	1,020	2.15	3.288 27	3,899 95	3,556.08	343.87	" "	"	Con. aw'd 1903
6	Eleventh ave....	Fairmount ave. to S. Eleventh st...	"	1.504	6,416	1.95	14,004 05				Wm. Van Keuren	"	" " "
7	Peshine ave.....	Waverly ave. to Bigelow st.....	"	730	2,800	2.15	9 209.60				Newark Pav'g Co.	"	Not compl'ted
8	Roseville ave.....	Bloomfield ave. to Newbold st.....	"	2 855	12,371	2.33	31,451.48				" " "	"	
9	Sylvan ave	Washington ave. to Summer ave...	"	2 042	8,066	2.33	22,146.44	23,512.90	20,032.11	3,480.79	" " "	"	Con. aw'd 1903
10	Seymour ave.....	Clinton ave. to Runyon st.....	"	1,503	5,140	2.15	12,652.75				" " "	"	
11	Bremen st.....	Hamburg pl. to Magazine st	Bitulithic	1,466	4 897	2.25	12,192.85	12,952.90	11,158.95	1,793.95	Warren Bros. Co.	"	
12	Clinton ave.....	Chadwick ave. to City Line.....	"	4.528	17,194	2.25	50.973.98				" " "	"	Con. aw'd 1903
13	Elwood ave.....	Summer ave. to Mt. Prospect ave..	"	688	3.255	2 25	8.342 68				" " "	"	
14	" "	Washington ave. to Summer ave...	Telford	732	8,732	1.09	19.314.91				Thos. A.O'Connor	"	
	" "	Mt Prospect av to Old Rd to Blo'mf'd	"	1.685							" " "	"	
15	West Park st.....	Broad st. to Halsey st.....	Wood	397	1,278	3 76	6.408.19	7.201.75	5,453 46	1,748.29	U. S. Wd. Pre. Co.	"	Con. aw'd 1903
		Grand Total		25,829	91,876		$255 805.61						

STREETS PAVED BY PRIVATE PARTIES.

Streets Paved.	Location.	Material.	Length.	Sq. Yards.	Contractors.	Character of Foundation Laid.	Remarks.
[illegible]ree st.....	Elizabeth st. to Darcy st.	Oblong Granite Block	490	1,694	J. R. Shanley	Sand	For Henaler Brewing Co. & others.
[illegible]harles st.....	Ferry st. to George st	" " "	475	1,826	" "	"	For Central R. R. Co. & Thatcher Co.
[illegible]el.....	Seventh ave.	Brick	183	366	David Harper	Concrete	For St. Lucy R. C. Church & others.
[illegible]ol.....	Halsey st. to 264 feet Easterly...	Bitulithic	264	1,062	Warren Bros. Co.		For New City Hall Commission.
[illegible]re ...	Mt. Prospect ave. to Clifton ave.	Telford	265	1,013	Thos. A.O'Connor		For H. Heller.
			1,677	5,861			

TABLE NO. 3--LIST OF STREET OPENINGS, FROM 1894 TO 1905.

	NAME.	LOCATION.	Confirmed.	Cost of Improvement.	Assessment on Property.	Assessment on City.	Damages.
1	S. Seventh st.	S. Orange ave. to 14th ave.....	May 5, 1894	$6,552.17	$6,552.17		$6,055.97
2	Belmont ave..	Avon ave. to Clinton ave.....	May 5, 1894	12 806.66	10,380.09	$2,426.57	12,180.06
3	Bremen st....	Magazine st. to 102 ft. west	Aug. 26, 1895	6,031.25	5,270.65	760.60	5,854.60
4	Horatio st....	Hawkins st. to Manufacturer pl.....	June 22, 1896	1,138.35	1,138.85		800.10
5	Berlin st.....	Magazine st. to Bonykamper ave.....	July 13, 1896	3,470.13	3 159.00	311.13	2,942.90
6	Lafayette st..	Broad st.....	Aug. 31, 1896	74,413.35	38,992.25	35,421.10	70,252.60
7	Fredonia ave.	Summer ave. to Clifton ave.....	Aug. 31, 1896	3,603.50	3,569.00	34.50	3,205.15
8	Arlington ave.	Mt Prospect ave. to present terminus.	Aug. 31, 1896	1,849.35	1,849.35		1,500.00
9	Avenue "I"..	Bay ave. to Jabez st.....	Sept. 21, 1896	2,106.70	1,470.00	636.70	1,583.25
10	Delavan ave..	Oraton st. to Lincoln ave.....	Oct. 24, 1896	11,097.41	10,677.00	420.41	10,269.35
11	Elizabeth st...	Westcott st. to Niagara st.....	Oct. 24 1896	728.15	728.15		400.05
12	S. Sixth st....	13th ave. to 12th ave.....	Oct. 24, 1896	1,181.55	1.181.55		780.10
13	Sylvan ave...	Summer ave. to Mt. Prospect ave.....	Oct. 24, 1896	5.650.40	5,291.00	359.40	5,198.23
15	S. 20th st.....	S. Orange ave. to 11th ave.....	Oct. 31, 1896	1,185.15	1,651.00	234.15	1.438.70
16	Eleventh ave.	S. 18th st. to S. 20th st.....	Oct. 31, 1896	657.65	356.00	301.65	329.75
16[a]	Morris ave....	S. Orange ave. to 13th ave.....	Nov 28, 1896				.05
17	Littleton ave..	16th ave. to Springfield ave..	July 19, 1897	6.201.00	5,947.00	254.00	5,700.00
18	Roseville ave.	Old City Line to Bloomfield ave.....	Dec. 6 1897	7,095.41	7,002.60	92.81	6,625.60
19	Fifteenth ave.	S. 11th st. to City Line.....	Nov. 29, 1897	9,962.47	9,102.39	860.08	9,451.80
20	Verona ave...	Riverside ave. to Passaic river....	July 11, 1898	7,054.28	614.50	6,439.78	6,500.00
21	Avenue "R".	Plank rd. to Peddie ditch.....	June 8, 1899	4,217.88	4,194.19	23.69	2,390.89
22	Komorn st....	Magazine st to 102 ft. west.....	June 10, 1899	2,344.15	2.054.69	289.46	1,800.00
23	Ridgew'd ave.	Clinton ave. to Madison ave.....	June 17, 1899	3,110.81	2,280.50	830.31	2,702.95
24	Grafton ave...	Summer ave. to Ridge st.....	June 10, 1899	5,423.80	4,519.25	904.55	5,224.10
25	Peshine ave..	Clinton ave. to Madison ave.....	June 10, 1899	2,235.70	1,998.00	237.70	1,805.84

TABLE NO. 8.—LIST OF STREET OPENINGS, FROM 1894 TO 1905.—CONTINUED.

	NAME.	LOCATION.	Confirmed.	Cost of Improvement.	Assessment on Property.	Assessment on City.	Damages.
26	Fairmount av.	16th ave. to Springfield ave.....	Oct. 27, 1899	$24,254.48	$11,278.00	$12,976.48	$23,775.06
27	Avenue "C".	Miller st. to Vanderpool st.....	Feb'y 9, 1900	2,592.60	2,106.00	486.60	2,031.46
28	Madison ave..	S. 11th st. to S. 18th st.....	Sept. 11, 1900	11,888.56	7 974.00	3,914.56	11,380.55
29	May st.....	Lincoln ave. to Summer ave.....	Sept. 11, 1900	1,883.15	1,193.22	689.93	1,393.60
30	Third st	Bloomfield ave. to First ave.....	Sept. 11, 1900	2,744.25	2,744.25		2,349.47
31	S. 19th st.....	McGregor Line to Clinton ave.....	May 18, 1901	5,010.00	5,010.00		4,466.17
32	Delavan ave..	Oraton st. to P. & N. R. R.....	Oct. 5, 1901	6,175.00	5,811.79	363.21	5,748.01
33	Adams st.....	South st. to Harper st.....	Sept. 2, 1902	4,022.50	1,715.00	2,307.50	3,684.00
34	Parkhurst st..	Goble st. to Dawson st.....	Nov. 22, 1902	4,204.60	1,620.36	2,674.24	3,351.10
35	Montclair ave.	Summer ave. to Mt. Prospect ave.....	March 7, 1903	7 965.60	4,630.00	3,335.60	7,160.10
36	*Clinton ave...	Chadwick ave. to City Line.....	July 20, 1903				9,474.85
37	N. Eighth st..	Bloomfield ave. to Chester ave.....	July 20, 1903	5,492.66	4,895.22	597.44	4,805.36
38	Willoughby st.	Bragaw ave. to St. James pl.....	Oct. 10, 1903	2,079.40	1,617.43	461.97	1,423.92
39	*Wainright st..	Shaw ave. to Lyons ave.....	Oct. 10, 1903				1,232.46
40	Seabury st...	Delavan ave. to Elwood ave.....	Oct. 10, 1903	2,544.00	1,836.19	707.81	1,900.00
41	S. 20th st.....	14th ave. to 19th ave.....	Oct. 10, 1903	3,453.77	3,142.11	311.66	2,192.04
42	Bigelow st....	Peshine ave. to Chadwick ave.....	Aug. 15, 1904	11,205.70	3,524.42	7,681.28	10,217.00
43	Chadwick ave.	413 S. Clinton to Hawthorne.....	Aug. 15, 1904	17,042.80	10,901.40	6,141.40	15,736.21
44	Bergen st.....	Custer ave. to Renner ave	Oct. 15, 1904	1 458.90	704.00	754.90	1,080.18
45	Hunterdon st.	" " " " "	Oct. 15, 1904	1,276.45	700.00	576.45	900.00
				$296,201.69	$201,382.07	$94,819.62	$279,243.58

TABLE NO. I—STREETS PAVED IN 1904.

	Streets Paved.	Location.	Material.	Length.	Sq. Yards.	Cost per Sq. Yard.	Final Estimate	Total Cost per Comptroller.	Assessment on Property.	Assessment on City.	Contractors.	Character of Foundation Laid.	Remarks.
1	Bigelow st.....	Elizabeth ave. to Johnson ave.....	Oblong	422	1,992	$2.15	$4,607.71				J. R. Shanley	Sand.	
2	Jay st.....	Orange st. to Sussex ave.....	Gran. B'ck	640	2 525	2.45	6,797.36	$7,425.40	$5,599.05	$1,826.35	" "	"	Con. aw'd 1903
3	N J R R ave East	Market st. to Tichenor st.....	"	4,590	12,600	2.79	42,685.00				" "	Concrete.	" " Not compl'ted
	" " " West	Pennington st. to Murray st..... ...	"	600									
4	Plane st.....	Market st. to Willam st.....	"	915	3,660	2.78	11,735.34				" "	"	
5	Aqueduct alley ..	Clifton ave. to Eighth ave.....	Brick	537	1,020	2.15	3.283 27	3,899 95	3,556.08	343.87	" "	"	Con. aw'd 1903
6	Eleventh ave....	Fairmount ave. to S. Eleventh st...	"	1,504	6,416	1.95	14,004 05				Wm. Van Keuren	"	" " "
7	Peshine ave.....	Waverly ave. to Bigelow st.....	"	730	2,800	2.15	9 209.60				Newark Pav'g Co.	"	Not compl'ted
8	Roseville ave.....	Bloomfield ave. to Newbold st.....	"	2 855	12,371	2.33	31,451.48				" " "	"	
9	Sylvan ave.	Washington ave. to Summer ave...	"	2 042	8,066	2.33	22,146.44	23,512.90	20,032.11	3,480.79	" " "	"	Con. aw'd 1903
10	Seymour ave.....	Clinton ave. to Runyon st.....	"	1,503	5,140	2.15	12,652.75				" " "	"	
11	Bremen st.....	Hamburg pl. to Magazine st	Bitulithic	1,466	4 837	2.25	12,192.85	12,952.90	11,158.95	1,793.95	Warren Bros. Co.	"	
12	Clinton ave.....	Chadwick ave. to City Line.....	"	4,528	17,194	2.25	50,973.98				" " "	"	Con. aw'd 1903
13	Elwood ave.....	Summer ave. to Mt. Prospect ave..	"	683	3.255	2 25	8.342 68				" " "	"	
14	" "	Washington ave. to Summer ave...	Telford	732	8,722	1.09	19.314.91				Thos. A.O'Connor	"	
	" "	Mt Prospect av to Old Rd to Blo'mf'd	"	1.685							" "	"	
15	West Park st.....	Broad st. to Halsey st.....	Wood	397	1,278	3 76	6.408.19	7.201.75	5,453 46	1,748.29	U. S. Wd. Pre. Co.	"	Con. aw'd 1903
		Grand Total		25,829	91,876		$255 805.61						

STREETS PAVED BY PRIVATE PARTIES.

Streets Paved.	Location.	Material.	Length.	Sq. Yards.	Contractors.	Character of Foundation Laid.	Remarks.
Alyea st.....	Elizabeth st. to Darcy st.....	Oblong Granite Block	490	1,624	J. R. Shanley	Sand	For Hensler Brewing Co. & others.
St. Charles st.....	Ferry st. to George st	" " "	475	1,826	" "	"	For Central R. R. Co. & Thatcher Co.
Amity pl.....	Seventh ave.	Brick	183	366	David Harper	Concrete	For St. Lucy R. C. Church & others.
Branford pl.....	Halsey st. to 264 feet Easterly...	Bitulithic	264	1,032	Warren Bros. Co.		For New City Hall Commission.
Delavan ave ...	Mt. Prospect ave. to Clifton ave.	Telford	265	1,013	Thos. A.O'Connor		For H. Heller.
			1.677	5,861			

TABLE No. 2.—AVERAGE PRICE PAID, PER SQUARE YARD, FOR THE DIFFERENT KINDS OF STREET PAVEMENT, FROM 1891 TO 1905.

	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
Granite Block on Concrete...		$3.29	$3.59	$3.03	$2.91	$2.18	$2.22	$2.20	$2.36	$2.78	$2.68	$2.78	$3.15	$2.79
" " " Sand.....	$2.50	2.38	2.38	2.40	2.08	1.82	1.46	1.49	1.61	1.85	1.78	1.96	2.24	2.30
Sheet Asphalt 6" concrete, 1½" binding, 2" wearing surface.....	2.86	2.87	2.85	2.80	2.70	2.58	2.35	1.56	1.91	2.12	1.84	1.90	1.97	
Fire-Clay Brick or Block, concrete filler					2.25	2.15					2.38			2.38
Fire-Clay Brick or Block, sand filler.....						2.14					2 25	1.98	2.10	
Shale Brick or Block, cement filler.....					2.19		2.03	1.75	. ..					2.15
Shale Brick or Block, sand filler.....										1.95		2.10	1.92	
Telford—10" thick.....											.97	.97	.99	1.09
Bitulithic—6" foundation, 2" wearing surface.....					.. .					. ..			2.25	2.25
Wood-Block, 4" thick, 5" concrete....		. ..	...											3.76
Trap Rock, oblong, on concrete....					2.75									
Trap-Rock oblong, on sand.	2.06	2.22	2.24	1.77	1.92									
" square, "	1.69	1.68												
Cobblestone, on concrete....				2.89										
" on sand.....		1.20	0.72			...								

TABLE NO. 3.--LIST OF STREET OPENINGS, FROM 1894 TO 1905.

	NAME.	LOCATION.	Confirmed.	Cost of Improvement.	Assessment on Property.	Assessment on City.	Damages.
1	S. Seventh st.	S. Orange ave. to 14th ave.....	May 5, 1894	$6,552.17	$6,552.17		$6,055.97
2	Belmont ave..	Avon ave. to Clinton ave.....	May 5, 1894	12 806.66	10,380.09	$2,426.57	12,180.06
3	Bremen st....	Magazine st. to 102 ft. west	Aug. 26, 1895	6,031.25	5,270.65	760.60	5,854.60
4	Horatio st....	Hawkins st. to Manufacturer pl.....	June 22, 1896	1,138.35	1,138.85		800.10
5	Berlin st.....	Magazine st. to Bonykamper ave.....	July 13, 1896	3,470.13	3 159.00	311.13	2,942.90
6	Lafayette st..	Broad st.....	Aug. 31, 1896	74,413.35	38,992.25	35,421.10	70,252.60
7	Fredonia ave.	Summer ave. to Clifton ave.....	Aug. 31, 1896	3,603.50	3,569.00	34.50	3,205.15
8	Arlington ave.	Mt Prospect ave. to present terminus.	Aug. 31, 1896	1,849.35	1,849.35		1,500.00
9	Avenue "I"..	Bay ave. to Jabez st.....	Sept. 21, 1896	2,106.70	1,470.00	636.70	1,583.25
10	Delavan ave..	Oraton st. to Lincoln ave.....	Oct. 24, 1896	11,097.41	10,677.00	420.41	10,269.35
11	Elizabeth st...	Westcott st. to Niagara st.....	Oct. 24 1896	728.15	728.15		400.05
12	S. Sixth st....	13th ave. to 12th ave.....	Oct. 24, 1896	1,181.55	1.181.55		780.10
13	Sylvan ave...	Summer ave. to Mt. Prospect ave.....	Oct. 24, 1896	5.650.40	5,291.00	359.40	5,198.23
15	S. 20th st.....	S. Orange ave. to 11th ave.....	Oct. 31, 1896	1,185.15	1,651.00	234.15	1.438.70
16	Eleventh ave.	S. 18th st. to S. 20th st.....	Oct. 31, 1896	657.65	356.00	301.65	329.75
16[a]	Morris ave....	S. Orange ave. to 13th ave.....	Nov 28, 1896				.05
17	Littleton ave..	16th ave. to Springfield ave..	July 19, 1897	6.201.00	5,947.00	254.00	5,700.00
18	Roseville ave.	Old City Line to Bloomfield ave.....	Dec. 6 1897	7,095.41	7,002.60	92.81	6,625.60
19	Fifteenth ave.	S. 11th st. to City Line.....	Nov. 29, 1897	9,962.47	9,102.39	860.08	9,451.80
20	Verona ave...	Riverside ave. to Passaic river....	July 11, 1898	7,054.28	614.50	6,439.78	6,500.00
21	Avenue "R".	Plank rd. to Peddie ditch.....	June 8, 1899	4,217.88	4,194.19	23.69	2,390.89
22	Komorn st,...	Magazine st to 102 ft. west.....	June 10, 1899	2,344.15	2,054.69	289.46	1,800.00
23	Ridgew'd ave	Clinton ave. to Madison ave.....	June 17. 1899	3,110.81	2,280.50	830.31	2,702.95
24	Grafton ave...	Summer ave. to Ridge st.....	June 10, 1899	5,423.80	4,519.25	904.55	5,224.10
25	Peshine ave..	Clinton ave. to Madison ave.....	June 10, 1899	2,235.70	1,998.00	237.70	1,805.84

TABLE NO. 8.—LIST OF STREET OPENINGS, FROM 1894 TO 1905.—CONTINUED.

	NAME.	LOCATION.	Confirmed.	Cost of Improvement.	Assessment on Property.	Assessment on City.	Damages.
26	Fairmount av.	16th ave. to Springfield ave.....	Oct. 27, 1899	$24,254.48	$11,278.00	$12,976.48	$23,775.06
27	Avenue " C ".	Miller st. to Vanderpool st.....	Feb'y 9, 1900	2,592.60	2,106.00	486.60	2,031.46
28	Madison ave..	S. 11th st. to S. 18th st.....	Sept. 11, 1900	11,888.56	7 974.00	3,914.56	11,380.55
29	May st.....	Lincoln ave. to Summer ave.....	Sept. 11, 1900	1,883.15	1,193.22	689.93	1,393.60
30	Third st	Bloomfield ave. to First ave.....	Sept. 11, 1900	2,744.25	2,744.25		2,349.47
31	S. 19th st.....	McGregor Line to Clinton ave.....	May 18, 1901	5,010.00	5,010.00		4,466.17
32	Delavan ave..	Oraton st. to P. & N. R. R.....	Oct. 5, 1901	6,175.00	5,811.79	363.21	5,748.01
33	Adams st.....	South st. to Harper st.....	Sept. 2, 1902	4,022.50	1,715.00	2,307.50	3,684.00
34	Parkhurst st..	Goble st. to Dawson st.....	Nov. 22, 1902	4,204.60	1,620.36	2,674.24	3,351.10
35	Montclair ave.	Summer ave. to Mt. Prospect ave.....	March 7, 1903	7 965.60	4.630.00	3,335.60	7,160.10
36	*Clinton ave...	Chadwick ave. to City Line.....	July 20, 1903				9,474.85
37	N. Eighth st..	Bloomfield ave. to Chester ave.....	July 20, 1903	5,492.66	4,895.22	597.44	4,805.36
38	Willoughby st.	Bragaw ave. to St. James pl.....	Oct. 10, 1903	2,079.40	1,617.43	461.97	1,423.92
39	*Wainright st..	Shaw ave. to Lyons ave.....	Oct. 10, 1903				1,232.46
40	Seabury st...	Delavan ave. to Elwood ave.....	Oct. 10, 1903	2,544.00	1,836.19	707.81	1,900.00
41	S. 20th st.....	14th ave. to 19th ave.....	Oct. 10, 1903	3,453.77	3,142.11	311.66	2,192.04
42	Bigelow st....	Peshine ave. to Chadwick ave.....	Aug. 15, 1904	11,205.70	3,524.42	7,681.28	10,217.00
43	Chadwick ave.	413 S. Clinton to Hawthorne.....	Aug. 15, 1904	17,042.80	10,901.40	6,141.40	15,736.21
44	Bergen st.....	Custer ave. to Renner ave	Oct. 15, 1904	1 458.90	704.00	754.90	1,080.18
45	Hunterdon st.	" " " " "	Oct. 15, 1904	1,276.45	700.00	576.45	900.00
				$296,201.69	$201,382.07	$94,819.62	$279,243.58

REPORT OF

ENGINEER OF DEPARTMENT OF SEWERS AND DRAINAGE.

FOR 1904.

To the Honorable the Board of Street and Water Commissioners.

GENTLEMEN.—I herewith respectfully submit my report showing the work done under the direction of this department for the year ending December 31, 1904.

PUBLIC SEWERS.

Contracts for 23 public sewers were awarded during the year under ordinances passed by your Board and with one exception were all completed and final estimates paid. Four contracts awarded but not finished in 1903 were also completed. In addition to the above, one sewer was constructed under the direction of the Street Department on a paving contract. Of the two sewers under special contract with the D., L. & W. R. R. Co., the smaller has been completed. The large relief sewer in the south wall of the main line has also been finished with the exception of the small section under the tracks near Duryee street and the work in Branch Brook Park. A temporary connection has been made with the old culvert under the tracks and the sewer has been in use for some time.

The total cost of all sewer work done under contract during the year was $287,749.20.

This is more than 2½ times the amount expended in 1903, and, in fact, has only been exceeded twice in the history of the city. The total length built during the year was

67,400 lineal feet, a figure also surpassed only twice in previous years.

For detailed list of public sewers and appurtenances see Table 1.

PRIVATE SEWERS.

Seven sewers have been constructed under private contract by consent of the Board and under the direction of this department. The total length of these private sewers is 1,493 lineal feet, together with one basin and nine manholes. (See Table 2).

Twenty-two additional basins and one manhole have been built by the Street Department under paving contracts and by special order of the Board, and private contracts, seven basins and six manholes.

STATEMENT OF SEWERS AND APPURTENANCES TO JANUARY 1st, 1905.

Total length of sewers built to January 1st, 1904, as per report for last year:

	LIN. FT.	MILES.
Brick	354,531	67.14
Pipe (Public)	562.035	106.43
Pipe (Private)	132,681	25.12
Total	1,049,247	198.69
Catch Basins		2,964
Manholes		5,721
Flush Tanks		29
*Total Cost		$3,829,914.98

BUILT DURING 1904.

	LIN. FT.	MILES.
Brick	9,933	1.88
Pipe (Public)	57,467	10.88
Pipe (Private)	1,493	0.29
Total	68,893	13.05
Catch Basins		92
Manholes		385
Flush Tanks		10
*Total Cost		$287,749.20

Eight basins were abandoned on account of changes of grade, making a total to date of:

	LIN. FT.	MILES.
Brick	364,464	69.02
Pipe (Public)	619,502	117.33
Pipe (Private)	134,174	25.41
Total	1,118,140	211.76
Catch Basins		3,056
Manholes		6,106
Flush Tanks		39
*Total Cost		$4,117,664.18

*Total Cost includes public sewer contracts only.

The first sewer built in the city, the Front and Rector Street Sewer, was completed in 1854, 50 years ago. The accompanying diagram (A) shows graphically the length of sewers built each year since that date. Private sewers built previous to the passage of the "Ordinance relating to Private Sewers," in 1885, are not included either in the diagram or the above tables.

The following table shows the highest, lowest and average contract prices for different sizes of pipe-sewers, manholes and basins built during the year, also the average prices paid in 1903. It will be noted that there has been a considerable reduction in the cost as compared to the previous year.

Highest, lowest and average cost of pipe-sewers and appurtenances for the year 1904 with average cost for 1903:

Prices include necessary Y branches.

	8"	10"	12"	15"	18"	20"	24"	M. H.	Bas.
Highest	$.90	$1.27	$1.35	$1 30	$1.60	$1.75	$2.80	$45.00	$125.00
Lowest	.57	.61	.69	1.00	1.40	1 50	2.09	34.50	93.00
Average, 1904	.76	.88	.99	1.15	1.54	1.62	2.38	39.45	109 25
" 1903	.89	.97	1.00	1.47	1.77	1.75	3.30	39.00	122.00

The year has seen the completion of two much needed improvements and the commencement of a third which have been under consideration for several years. I refer to the Peddie Street, Adams Street and South Fourteenth Street Sewers. While the total cost of these three improvements will reach a total of over $200,000., it is believed that the re-

lief afforded to the several sections in which they lie will fully compensate for the cost.

There are two other sections of the city badly in need of Relief Sewers, namely in the vicinity of Broad and Murray streets and at Central avenue and Duryee street. It will also be necessary to extend the Peddie Street Relief Sewer south through Badger avenue and Boyd street.

INTERCEPTING SEWER.

The following statement shows the quantity of sewage and storm water lifted at the pumping station during the year, also the amount of coal consumed and ashes removed.

Total quantity pumped, 4,872,518,152 gallons.
Maximum pumped per day, Dec. 27th, 27,007,080 gallons.
Minimum pumped per day, Aug. 18th, 6,841,560 gallons.
Average pumped per day, 13,312,891 gallons.
Coal consumed, 1,797,996 lbs.
Ashes removed, 345,340 lbs.

Last year the average pumped per day was 12,875,578 gallons. The amount of sewage reaching the pumping station has nearly doubled since 1888, the first full year of operation, and the length of tributary sewers more than doubled.

On 51 days during the past year both pumps had to be run in order to handle the flow. It will soon be necessary to seriously consider the enlargement of the plant.

JOINT OUTLET SEWER.

As stated in last year's report the completion of this outlet allows of the sewering of some 265 acres in the western part of the city which could not otherwise have been provided for. This area was divided into three sections and separate contracts awarded for the construction of the lateral sewers in each section. One of these, connecting with the outlet at South Orange avenue was finished in 1903 and included in last year's report. The other two sections connecting at Nineteenth avenue and Lyons avenue, respectively, were finished during the year just past.

The following shows the total length and cost of the entire improvement:

	LENGTH.	COST.
South Orange Avenue Section.....	12,452 ft.	$11,930.72
Nineteenth Avenue Section	14,494 "	15,868.02
Lyons Avenue Section	21,771 "	37,240.05
	48,717 ft.	$65,038.79
To this must be added Newark share of the cost of the Joint Outlet Sewer		$66,864.86
Making a total of		$131,903.65

In addition to the above a storm water system was constructed in the Lyons Avenue District discharging into the natural water courses. This system consisted of 2,971 feet of brick and large pipe-sewers with which were connected 17 catch basins. The total cost was $19,375.10.

A storm water system will also be necessary in the other sections, in order to provide for the drainage of the pond at Fifteenth avenue and to prevent the surface wash on South Orange avenue.

In addition to the sewer work above mentioned the following contracts have been given out chargeable to the Wharf Account.

PASSAIC RIVER DREDGING.

The river was dredged at the outlets of the City Dock, Orange Street and Mill Brook Sewers, a total quantity of 1,330 cubic yards being removed. The work was done by John Dunfee & Co., of New York, at a contract price of 70 cents per cubic yard or a total of $931.00.

The last dredging previous to this was done in 1899, when 2,970 cubic yards were removed at the City Dock, Mill Brook and Fourth Avenue Sewers.

HERBERT PLACE DOCK.

Late in October a contract was awarded to the Sanford & Harris Co. for the construction of a dock at the foot of Herbert place for the sum of $1,295.00. This work is not completed and no payments have been made.

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW)

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE

February, 1904. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET.

Table No. 2.

Day of Month	Beginning	Ending	Max. in 5 min in Inches.	Beginning	Max. in 30 min in Inches	Beginning	Max. in 1 hour in Inches.	Beginning	Am't of Rain or Melted Snow in Inches	Depth of Snow in Inches	(gen'l Direct'n of Wind.	Max. Velocity of Wind. Miles per hour	Average Temperature. Degrees.	Remarks.
1														
2														
3														
4														
5														
6														
7	12.15 p m	12.31 p m							0.04		S W	15	47	
8														
9														
10														
11														
12														
13	8.00 a m	11.30 p m							0.09	1.30	S E	20	30	
14														
15														
16														
17														
18	12.00 a m	6.30 p m							0.12	4.00	N W	24	23	
19	8.05 p m	12.00 p m							0.40		E	30	31	
20	12.00 a m	11.00 a m							1.04		W	30	30	
21														
22	3.15 a m	8.10 a m							0.12		N W	12	34	
23														
24														
25														
26														
27	10.35 a m	7.30 p m							0.36		S E	15	35	
28	8.30 p m	12.00 p m							0.20	0.30	N E	30	35	
29														
									2.97	5.80				

MONTHLY REPORT OF PRECIPITATION(RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

March, 1904. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table No. 3.

Day of Month	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind. Miles per hour.	Average Temperature. Degrees.	Remarks.
1	12.00 a m	4.00 a m							0.13	0 80	N E	24	33	
2														
3	3.15 a m	8.00 p m							0.11		S	60	36	
4														
5														
6	6.00 a m	5.45 p m							0.04		N E	10	33	
7	10.00 a m	12.00 p m	0.06	3.40 p m	0.10	3.40 p m	0.25	3.00 p m	1.15		E	30	44	
8	12.00 a m	12.30 a m							0.01		W	15	42	
9														
10														
11	6.40 a m	9.10 p m							0.09	0.50	N E	20	28	
12														
13														
14	1.40 p m	12.00 p m							0.21	2.00	E	15	26	
15	12.00 a m	4.00 a m							0.12	1.00	W	15	33	
16														
17														
18	4.15 a m	11.00 a m							0.33	3.00	W	12	37	
19														
20														
21	4.00 p m	12.00 p m							0.24		S E	9	34	
22	12.00 a m	12.00 p m							0.22		N E	9	36	
23	4.15 a m	7.00 a m							0.01		N W	20	45	
24														
25														
26														
27														
28														
29														
30														
31	6.25 a m	12.00 p m							0.90		N E	15	34	
									3.56	7.30				

RAINFALL OBSERVATIONS.

The usual tables of rainfall, compiled from observations taken by Prof. Sonn, of the High School, will be found attached to this report.

The following shows the monthly precipitation as compared with 1903:

	1903.	1904.
January	4.26	3.27
February	4.59	2.67
March	4.08	3.56
April	3.14	4.71
May	0.42	2.93
June	11.52	3.00
July	4.27	5.36
August	14.54	7.46
September	4.56	4.19
October	13.26	4.16
November	0.92	1.85
December	3.56	2.87
Total	69.10	46.03

The most severe storm of the year occurred on August 20, when 3.23 inches of rain fell in nine hours and forty minutes. The maximum fall in one hour was 1.07 inches.

Beside the regular office work, a complete record has been started and nearly completed of all sewers which have been built in the city since the construction of the first sewer in 1854. This record is similar to the tables now published in the annual reports.

As much time as could be spared has also been given to the Assessment Commissioners in preparing maps for sewer assessments.

The field and office force continues the same as last year. John A. Schieck, Principal Assistant, James B. Burnett, Jr., Harry D. Franklin and Goline Doremus, Assistants, also in connection with the Street Department George C. Brandley and Arthur U. Schiener.

Respectfully submitted,

EDWARD S. RANKIN,

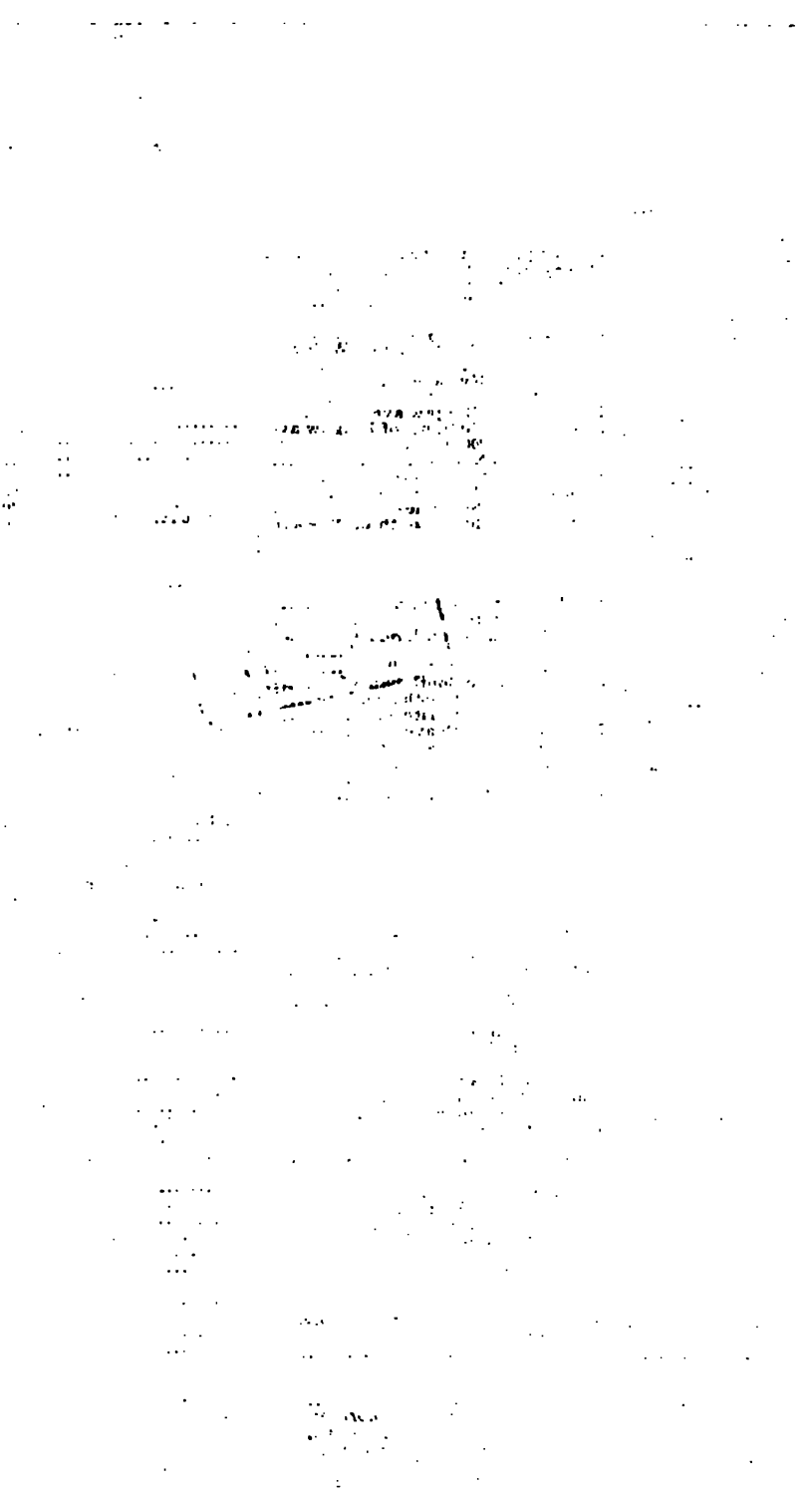
Engineer of Department of Sewers and Drainage.

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

May, 1904. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table No 5.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind. Miles per hour.	Average Temperature. Degrees.	Remarks.
1	6.45 p m	9.15 p m	0.10	6.45 p m	0.15	6.45 p m	0.22	6.45 p m	0.27		S E	8	60	Thunderstorm.
2														
3														
4														
5														
6														
7														
8														
9	5.50 a m	8.50 p m							0.02		W	30	69	
10	2.30 p m	8.50 p m							0.19		S W	12	58	
11														
12														
13														
14														
15	5.45 p m	9.50 p m							0.53		E	12	55	
16														
17														
18														
19	12.00 a m	8.00 p m							0.12		N E	9	58	Thunderstorms.
20	1.30 a m	2.00 a m							0 01		W	16	61	
21														
22														
23														
24														
25	8.00 p m	9.30 p m							0.11		E	30	72	Thunderstorm.
26														
27														
28														
29														
30	5.40 p m	7.45 p m							0 83		S W	15	67	Thunderstorm.
31	12.15 a m	5.15 a m							0 85		N E	20	60	Thunderstorm.
									2.93					



MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

January, 1904. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table No. 1.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind. Miles per hour.	Average Temperature. Degrees.	Remarks.
1														
2	3.00 a m	11 00 p m							1.10	6.30	N E	30	10	
3	12.35 a m	4 00 a m							0.10	1.00	W	20	5	
4														
5														
6														
7	11 15 a m	1.00 p m							0.01	0.60	N W	12	27	
8														
9														
10														
11														
12														
13	5.50 a m	8 30 p m							0 50		N E	30	35	
14														
15														
16									0.06	0.50	S	18	30	
17														
18														
19														
20														
21	7.00 p m	9.15 p m							0.10		N E	15	30	
22	6.00 a m	5.00 p m							0.36		N W	20	42	
23	4 30 a m	12 00 m							0 13		N W	12	45	
24														
25														
26	11 05 a m	7.00 p m							0.53	1.50	N E	15	26	
27														
28														
29	12.00 a m	12.00 p m							0.35	5.00	N W	15	22	
30														
31														
									3.27	14.90				

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

June, 1904. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table No. 6.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind. Miles per hour.	Average Temperature Degrees.	Remarks.
1	12.45 a m	7.30 p m							0.30		N E	20	57	
2	2.00 a m	12.00 p m							0.11		N E	12	57	
3	4.50 a m	5.00 a m							0.01		N W	8	66	
4														
5	12.30 a m	3.30 p m							0.19		S	30	76	Two Thunderstorms.
6	11.35 p m	12.00 p m							0.08		S W	20	81	Thunderstorm.
7	12.00 a m	12.00 p m							0.42		S W	8	74	Various Showers.
8	7.10 p m	9.00 p m	0.15	7.20 p m	0.26	7.20 p m	0.41	7.20 p m	0.41		N E	12	68	Thunderstorm.
9	2.00 a m	9.00 p m							0.17		N E	30	54	Various Showers.
10														
11														
12														
13														
14														
15														
16	2.45 p m	3.30 p m							0.06		E	10	69	
17	2.50 a m	3.15 a m							0.06		S E	10	66	
18														
19														
20	9.20 p m	11.00 p m							0.02		S	15	78	Thunderstorm.
21	12.30 a m	1.15 a m	0.15	12.25 a m	0.20	12.25 a m	0.25	12.25 a m	0.24		S W	18	76	Thunderstorm.
22	11.28 a m	11.33 a m							0.03		W	40	70	
23														
24														
25														
26	2.25 p m	2.55 p m							0.06		W	30	84	Thunderstorm.
27														
28														
29	2.15 a m	6.15 a m							0.56		W	10	71	
30	6.30 a m	7.10 p m							0.28		S E	20	73	Thunderstorms.
									3.00					

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

July, 1904. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table No. 7.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind Miles per hour.	Average Temperature Degrees.	Remarks.
1	7.02 p m	7.45 p m							0.20		S W	20	74	Thunderstorm.
2														
3														
4														
5														
6	7.10 p m	12.00 p m							0.34		S W	15	74	Thunderstorm.
7	12.00 a m	12.00 p m	0.10	7.25 p m	0.14	7.20 p m	0.16	7.00 p m	0.32		N E	15	71	Thunderstorms.
8	12.00 a m	7.50 p m	0.11	6.20 a m	0.21	6.20 a m	0.35	6.00 a m	0.60		N	15	67	
9														
10	7.30 a m	8.55 p m							0.07		S E	15	69	
11	5.00 p m	8.00 p m	0.10	5.15 p m	0.14	5.10 p m	0.41	5.00 p m	0.80		S W	20	74	
12	6.30 p m	11.30 p m	0.14	6.57 p m	0.20	6.57 p m	0.26	6.40 p m	0.30		S E	20	75	Showers & Thunderst'ms.
13	12.10 p m	6.30 a m							0.13		N W	24	69	
14														
15														
16														
17														
18	12.45 a m	7.30 a m							0.40		W	20	79	
19														
20														
21														
22	9.15 p m	10.20 p m							0.01		N E	15	67	
23	5.10 a m	7.30 a m							0.04		N E	15	67	
24	5.50 a m	9.30 p m							0.29		N E	15	64	
25	12.00 p m	9.00 p m							Trace		S	12	72	
26	3.30 p m	5.45 p m							0.03		S	10	78	
27														
28	1.30 p m	11.45 p m	0.41	1.40 p m	0.57	1.35 p m	1.07	1.35 p m	1.72		S	12	69	Thunderstorm.
29	3.30 a m	4.15 a m							Trace		N W	15	72	
30														
31	4.30 p m	5.10 p m							0.11		S W	24	79	Thunderstorm.
									5.36					

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

August, 1904. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table No. 8.

Day of Month	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches	Gen'l Direct'n of Wind.	Max. Velocity of Wind. Miles per hour.	Average Temperature, Degrees.	Remarks.
1	2.30 p m	10.30 p m							0.14		S W	24	76	
2	8.30 a m	3.00 p m	0.15	4.20 a m	0.28	4.15 a m	0.36	4.15 a m	0.64		N	10	69	
3														
4	12.40 p m	2.45 p m							0.22		S E	16	72	
5	3.45 a m	4.30 p m							0.89		S E	30	72	
6	2.30 a m	3.10 a m							0.03		W	30	77	
7														
8	5.30 a m	6.20 a m							0.10		W	24	71	
9														
10	2.30 a m	12.00 p m							1 25		S E	30	71	
11	12.00 a m	2.30 a m							0.19		W	20	74	
12														
13	5.00 a m	5.50 a m							0.06		S E	20	68	
14	2.00 a m	10.40 a m							0.46		N W	10	75	
15														
16	6.30 p m	6.35 p m							*		N W	10	72	* Too small to be measured.
17														
18														
19	11.30 p m	12.00 p m							*		S E	15	67	* Too small to be measured.
20	12.30 a m	10 10 a m							3.23		S	30	75	
21	4.45 p m	6.15 p m							0.17					
22														
23	7.05 p m	8.45 p m							0.08		N W	15	74	
24														
25														
26														
27														
28														
29														
30														
31														
									7.46					

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

September, 1904. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table No. 9.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind Miles per hour.	Average Temperature. Degrees	Remarks.
1														
2	4.20 a m								*		S	10	72	*Too small to be measured.
3	3.00 a m	6.00 a m							*		S	6	74	*Too small to be measured.
4														
5														
6														
7														
8														
9	12.30 p m	1.30 p m							*		N E	16	59	*Too small to be measured.
10														
11														
12	7.50 p m	8.45 p m							*		S W	15	72	*Too small to be measured.
13	5.00 a m	7.00 p m							*		N E	15	62	*Too small to be measured.
14	6.30 a m	10.45 p m	0.40	7.58 p m	0.46	7.55 p m	0.62	7.58 p m	1.82		E	8	68	
15	2.00 a m	6.00 a m	0.10	Various	0.20	Various	0.72	3.00 a m	1.93		W	60	57	
16														
17														
18														
19														
20	4.30 p m	8.00 p m							0.14		N E	12	66	
21														
22														
23														
24														
25	2.40 a m	4.30 a m							0.11		N W	12	72	
26	5.35 p m	5.45 p m							0.01		E	10	64	
27														
28														
29	5 30 p m	9.30 p m							0.08		S W	15	65	
30														
									4.19					

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

October, 1904. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table No. 10.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind Miles per hour.	Average Temperature. Degrees.	Remarks.
1														
2	3.50 p m	7.15 p m							0.08		W	12	53	
3														
4														
5	11.10 p m	11.40 p m							0.02		S	15	60	
6	2.00 a m	8.10 a m							0.07		N W	30	49	
7														
8	9.30 p m	12.00 p m							0.15		S W	15	53	
9	12.00 a m	2.00 p m							0.21		S W	12	58	
10														
11	4.50 a m	6.30 a m							0.01		W	15	65	
12	3.20 a m	3.00 p m	0.13	4.25 a m	0.24	4.25 a m	0.67	3.35 a m	1.63		N E	30	42	
13														
14														
15														
16														
17														
18														
19														
20	10.35 p m	10.45 p m							0.01		E	10	59	
21	1.20 a m	11.25 a m							1.98		W	45	56	
22														
23	2.00 p m	2.15 p m							*		W	15	47	*Too small to be measured.
24														
25														
26														
27														
28														
29														
30														
31														
									4.16					

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

July, 1904. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table No. 7.

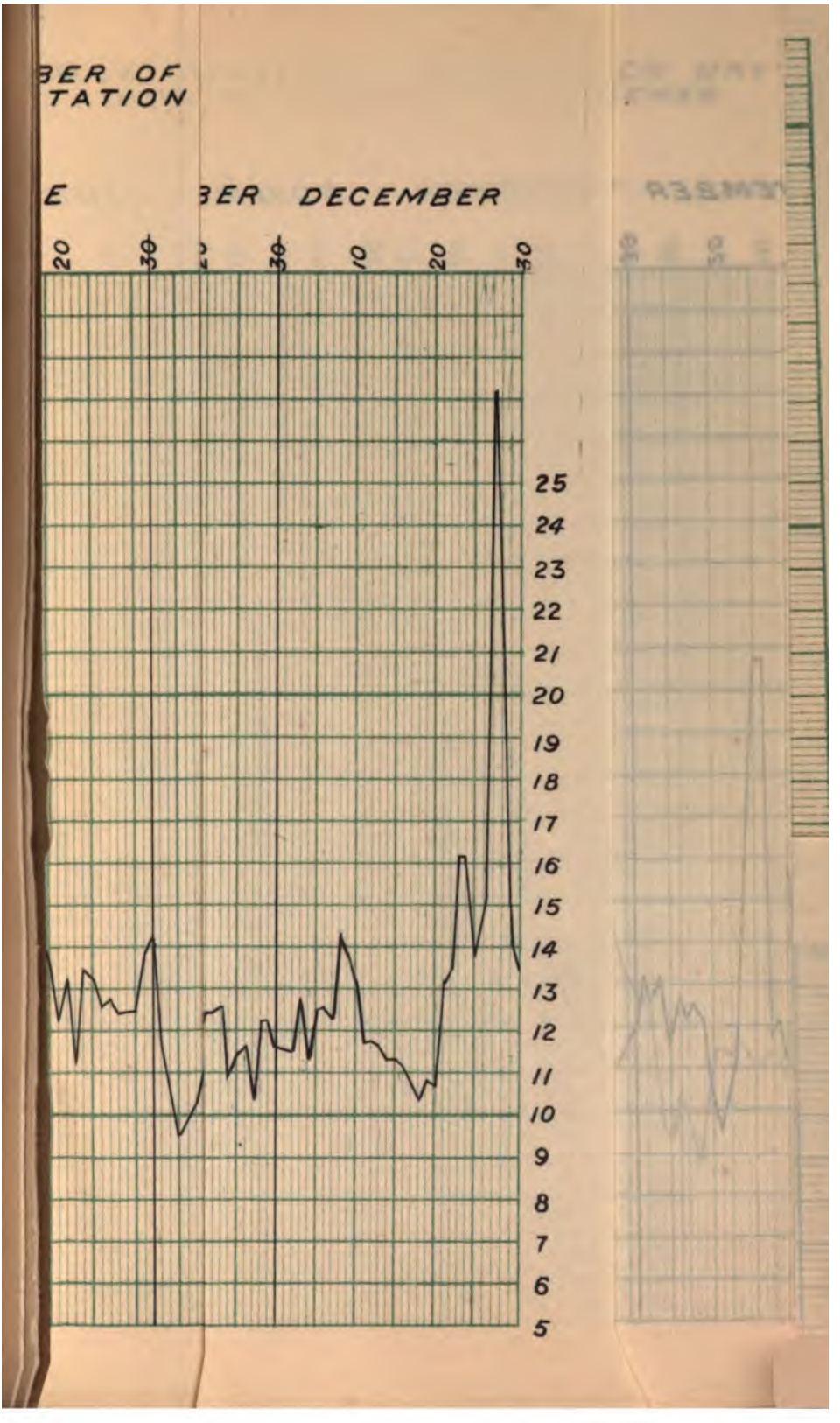
Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches.	Gen'l Direct'n of Wind.	Max. Velocity of Wind Miles per hour.	Average Temperature Degrees.	Remarks.
1	7.02 p m	7.45 p m							0.20		S W	20	74	Thunderstorm.
2														
3														
4														
5														
6	7.10 p m	12.00 p m							0.84		S W	15	74	Thunderstorm.
7	12.00 a m	12.00 p m	0.10	7.25 p m	0.14	7.20 p m	0.16	7.00 p m	0.32		N E	15	71	Thunderstorms.
8	12.00 a m	7.50 p m	0.11	6.20 a m	0 21	6.20 a m	0.35	6.00 a m	0.60		N	15	67	
9														
10	7.30 a m	3.55 p m							0.07		S E	15	69	
11	5.00 p m	8.00 p m	0.10	5.15 p m	0.14	5.10 p m	0.41	5.00 p m	0.80		S W	20	74	
12	6.30 p m	11.30 p m	0 14	6.57 p m	0.20	6.57 p m	0.26	6.40 p m	0.30		S E	20	75	Showers & Thunderst'ms.
13	12.10 p m	6.30 a m							0.18		N W	24	69	
14														
15														
16														
17														
18	12.45 a m	7.30 a m							0.40		W	20	79	
19														
20														
21														
22	9.15 p m	10.20 p m							0.01		N E	15	67	
23	5.10 a m	7.30 a m							0.04		N E	15	67	
24	5.50 a m	9.30 p m							0.29		N E	15	64	
25	12.00 p m	9.00 p m							Trace		S	12	72	
26	3.30 p m	5.45 p m							0.03		S	20	73	
27														
28	1.30 p m	11.45 p m	0.41	1.40 p m	0.57	1.35 p m	1.07	1.35 p m	1.72		S	12	69	Thunderstorm.
29	3 30 a m	4.15 a m							Trace		N W	15	72	
30														
31	4.30 p m	5.10 p m							0.11		S W	24	79	Thunderstorm.
									5.36					

MONTHLY REPORT OF PRECIPITATION (RAIN AND MELTED SNOW).

AS OBSERVED AT NEWARK PUBLIC HIGH SCHOOL, BY PROF. G. C. SONN, WITH U. S. GOVERNMENT RAIN GAUGE.

August, 1904. ELEVATION OF GAUGE ABOVE SEA LEVEL, 40 FEET. Table No. 8.

Day of Month.	Beginning.	Ending.	Max. in 5 min. in Inches.	Beginning.	Max. in 10 min. in Inches.	Beginning.	Max. in 1 hour in Inches.	Beginning.	Am't of Rain or Melted Snow in Inches.	Depth of Snow in Inches	Gen'l Direct'n of Wind.	Max. Velocity of Wind. Miles per hour.	Average Temperature, Degrees.	Remarks.
1	2 30 p m	10.30 p m							0.14		S W	24	76	
2	3.30 a m	3.00 p m	0.15	4.20 a m	0.28	4.15 a m	0.36	4.15 a m	0.64		N	10	69	
3														
4	12.40 p m	2.45 p m							0.22		S E	16	72	
5	3.45 a m	4.30 p m							0.89		S E	30	72	
6	2.30 a m	3.10 a m							0.03		W	30	77	
7														
8	5.30 a m	6.20 a m							0.10		W	24	71	
9														
10	2.30 a m	12.00 p m							1 25		S E	30	71	
11	12.00 a m	2.30 a m							0.19		W	20	74	
12														
13	5.00 a m	5.50 a m							0.06		S E	20	68	
14	2.00 a m	10.40 a m							0.46		N W	10	75	
15														
16	6.30 p m	6.35 p m							*		N W	10	72	* Too small to be measured.
17														
18														
19	11.30 p m	12.00 p m							*		S E	15	67	* Too small to be measured.
20	12 30 a m	10 10 a m							3.23		S	30	75	
	4.45 p m	6.15 p m							0.17					
21														
22	7.05 p m	8.45 p m							0.08		N W	15	74	
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